

## **Trends in Breast Feeding Among American Mothers**

Statistics based on data collected in 1973 are presented on breast feeding of first- and second-born babies. The percentages of mothers who breast fed and who breast fed for 3 months or more are distributed by year of the mother's birth and year of the baby's birth. These distributions are shown separately for women classified by race or ethnicity, geographic region, and various socioeconomic variables.

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# TRENDS IN BREAST FEEDING AMONG AMERICAN MOTHERS

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## INTRODUCTION

In recent decades there was a substantial decline in the proportion of mothers who have breast fed their children. The decline occurred in most socioeconomic and cultural groups but was greater among poor women, black women, and women with fewer years of education than among other women. In the early 1970's the decline may have leveled off or even reversed, especially in the West Region, although that recent change is not large enough to be statistically significant.

The trends and differentials in breast feeding among American women are analyzed in this report using information collected in the 1973 National Survey of Family Growth and the 1965 National Fertility Study. Trends in the percent of women who breast fed their first and second babies and the percent who breast fed them for 3 months or more are examined in relation to various socioeconomic and cultural characteristics of the mothers. Trends are examined across cohorts of women born in the same years, years of birth of their infants, and the survey years, 1965 and 1973.

Trends and differentials in breast feeding are significant in several ways. Medical research has found that mothers' milk may have health benefits for newborn infants, including short-term immunity from some diseases and a nutritional composition that reduces the incidence of both malnutrition and obesity in breast fed babies.<sup>1</sup>

Breast feeding also prolongs the period of post partum amenorrhea, thus acting as a natural contraceptive, although for a short interval of uncertain length.<sup>2,4</sup> Also, it has been suggested that women who breast feed have a lower risk of breast cancer mortality,<sup>5</sup> but epidemiological studies have not produced conclusive evidence of that association.<sup>6,7</sup> Various other physiological and psychological effects on mothers and infants which have been attributed to breast feeding are under scientific investigation.

In spite of the importance of breast feeding, little information is available about its prevalence at the present time, trends in the recent past, or differences among various groups. The one systematic study with a nationally representative sample was published in 1974 by Hirschman and Sweet<sup>8</sup> with data from the 1965 National Fertility Study. Hirschman and Sweet documented a decline in breast feeding up to 1965 and examined its relationship to education, ethnicity, farm origin, and a number of other socioeconomic and cultural characteristics of the mothers. Their analyses considered breast feeding of first-born infants for any duration by women who were married and living with their husbands at the time of interview. In addition to updating the Hirschman and Sweet analyses to 1973, this report extends their findings by including second-born infants and by considering variations in duration of breast feeding. It also includes all women who have been married, whether or not they are currently married.

## SUMMARY OF PRINCIPAL FINDINGS

Both the 1973 National Survey of Family Growth (NSFG) and the 1965 National Fertility Study (NFS) data show the dramatic decline in the incidence of breast feeding in recent generations of American women. Trends by birth cohorts of women show that two-thirds of the women born in the second decade of this century breast fed their first infant, but only one-quarter of the women born in the late 1940's and early 1950's did so. A similar trend is

observed in the period rates by year of birth of infant. Over 70 percent of first-born infants in the 1930's were breast fed, while less than 30 percent in the late 1960's and early 1970's were breast fed (see figure 1). The decline leveled off in the early 1970's, but it is too early to say if this foretells a rise in the rate of breast feeding.

The decline in long-term breast feeding—the proportion of mothers who breast fed their infants for 3 months or more—has been even more precipitous. According to the 1973 NSFG, less than 10 percent of the mothers whose first child

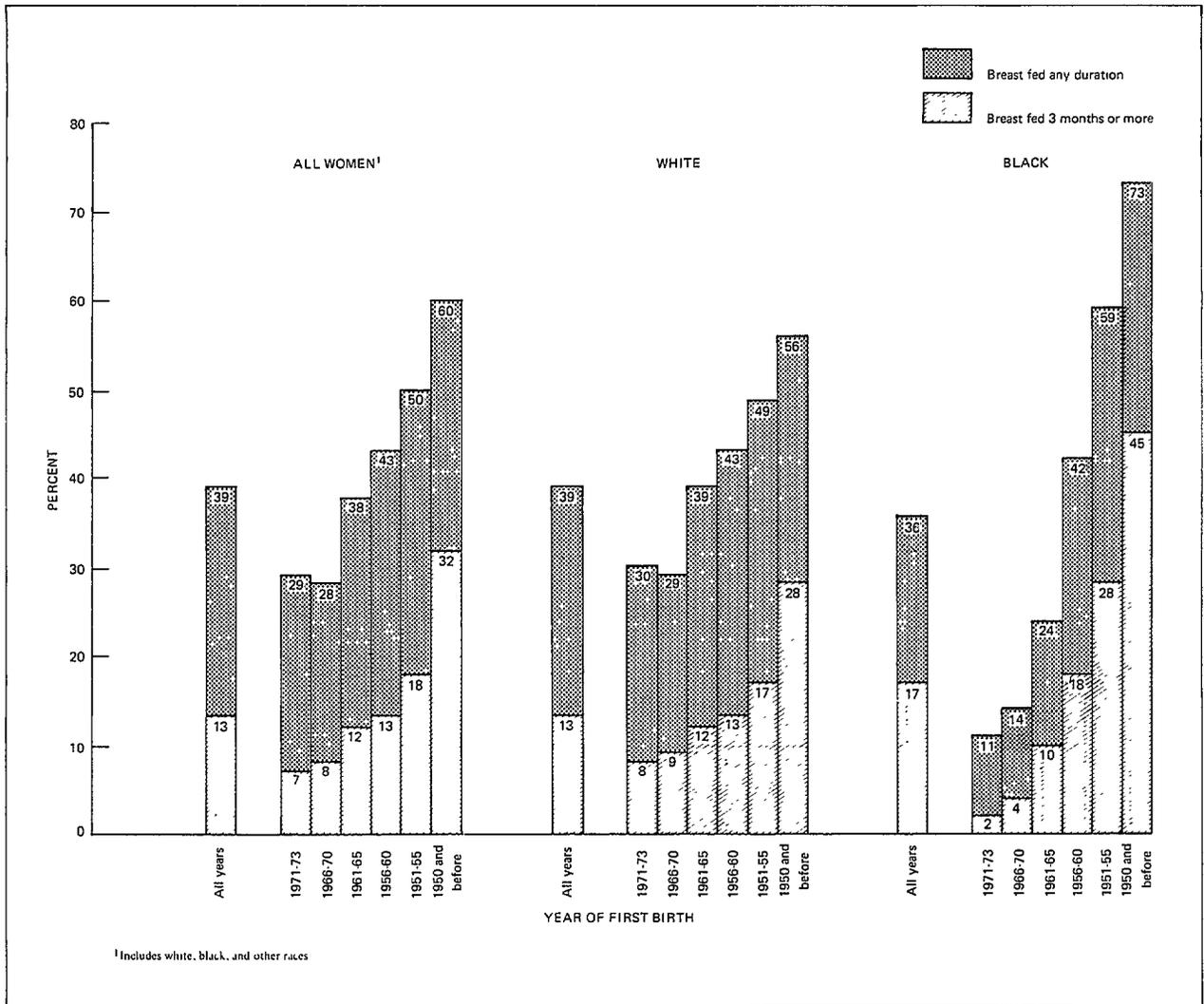


Figure 1. Percent of ever-married women 15-44 years of age who breast fed their first child, by duration of breast feeding, year of first birth, and race: United States, 1973

was born from 1966 to 1973 had breast fed their baby for 3 months or more, a substantial decline from earlier periods. This indicates that more than two-thirds of the women who breast fed their infants in recent years had stopped by the time the child was 3 months old, presumably switching to bottle feeding.

Second-born babies are considerably less likely than first-born babies to be breast fed. Among breast fed babies, however, second-born babies are more likely than first-born babies to be breast fed for longer durations (see figure 2).

The level and trend in breast feeding varies widely across various socioeconomic and cultural categories. Several groups show a very high incidence of breast feeding, with about 50 percent breast feeding the first baby and with almost no downward trend in the last 20 years. Included are women living in the West, women with 16 years or more of education, and women who have had jobs as professionals or managers. Among the groups that have experienced the

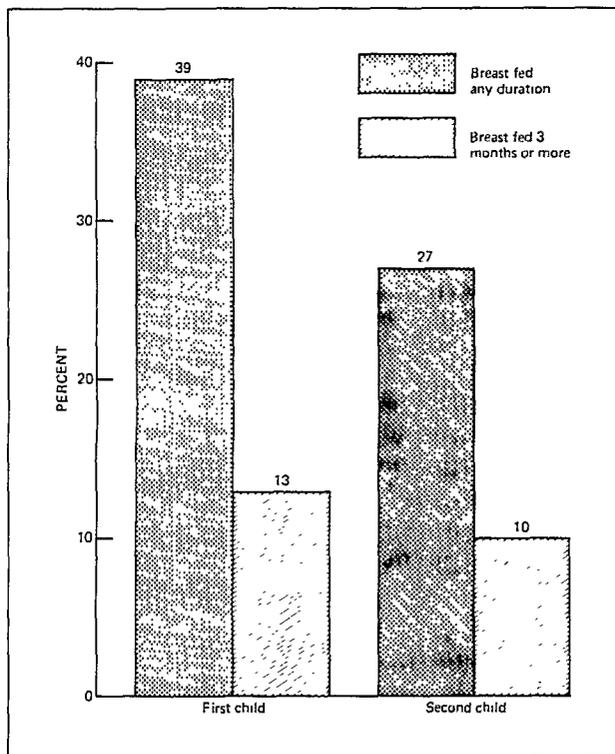


Figure 2. Percent of ever-married women 15-44 years of age who breast fed their first or second child, by duration of breast feeding and order of birth: United States, 1973

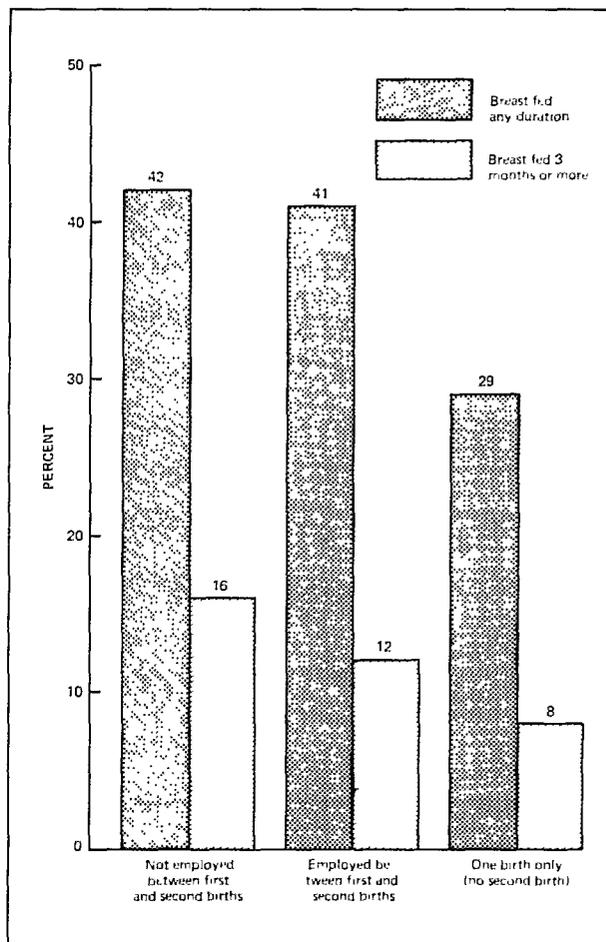


Figure 3. Percent of ever-married women 15-44 years of age who breast fed their first child, by duration of breast feeding and employment between first and second births: United States, 1973

most precipitous declines in breast feeding levels over the past two decades are black women, women with less than 12 years of education, and women who have never worked outside the home. There are small differences in the levels of breast feeding of first children among women classified by farm or nonfarm origins, current poverty status, religion, and work experience between the births of their first and second children (see figure 3).

## DATA AND METHODS

The primary source of data for this study is Cycle I of the National Survey of Family

Growth (NSFG-I). In NSFG-I, conducted in 1973 by the National Center for Health Statistics, interviews were held with a nationwide, area probability sample of 9,797 women aged 15-44 years who had ever been married or who had children of their own living in the household. The focus of the survey was on fertility, family planning, and related maternal and child health topics. The NSFG extends the time series of earlier cross-sectional fertility surveys done under other auspices, particularly the 1965 and 1970 National Fertility Studies. Interviewing was done under contract with the National Opinion Research Center from July 1973 to February 1974, centered on September 13, 1973. Further details of the sampling design and other technical aspects of the NSFG are available in appendix I of this report.

In table A, data from the 1965 National Fertility Study are also used. The 1965 NFS was similar in content and structure to the 1973 NSFG, but its sample consisted of 5,617 married women, with spouse present, born after July 1, 1910. When comparisons are made between the two surveys, only those women who were currently married in the 1973 NSFG are included. Further details on the sample and content of the 1965 NFS are available in a report by Ryder and Westoff.<sup>9</sup>

Throughout this study, the focus is on trends and differentials in the proportion of women who breast fed their babies, not the proportion of babies who were breast fed. With this focus, the findings presented in this report show the comparative frequency with which mothers in different groups have breast fed their infants.

Because cumulative opportunity for breast feeding increases with the number of births, which varies from woman to woman, it is important to compare the behavior of women with equal numbers of births. The approach in this report is to analyze breast feeding behavior separately for women when they had their first child and when they had their second. In each case the sample is defined accordingly; that is, the proportion who breast fed their first baby is based on the population of women who had one or more births, and the proportion who breast fed their second baby is based on the population

Table A. Percent of currently married women who breast fed their first or second child, by birth cohort of mother and year of birth of child: United States, 1973 and 1965<sup>1</sup>

Birth cohort of mother and year of birth of child	First child <sup>2</sup>		Second child <sup>3</sup>	
	1973	1965	1973	1965
All women.....	38.4	50.5	26.8	37.6
<u>Birth cohort of mother</u>				
1951-59.....	25.6	---	16.6	---
1946-50.....	25.7	21.8	19.8	13.8
1941-45.....	37.7	34.8	26.1	24.1
1936-40.....	43.2	36.6	26.8	25.9
1931-35.....	49.6	45.9	31.4	30.8
1926-30 <sup>4</sup> .....	47.1	47.5	32.6	33.4
1921-25.....	---	57.8	---	40.0
1916-20.....	---	65.7	---	49.4
1911-15.....	---	68.3	---	62.8
<u>Year of birth of child</u>				
1971-73.....	29.1	---	23.6	---
1966-70.....	28.3	---	22.7	---
1961-65.....	38.0	32.3	24.6	22.7
1956-60.....	43.1	36.0	28.3	27.5
1951-55.....	48.8	46.6	34.4	33.2
1946-50 <sup>5</sup> .....	58.9	50.5	55.0	41.3
1941-45.....	---	64.5	---	53.7
1936-40.....	---	77.4	---	65.9
1931-35.....	---	72.0	---	75.7

<sup>1</sup>Data from the 1965 National Fertility Study include women born after July 1, 1910; data from the 1973 National Survey of Family Growth, Cycle I, include women 15-44 years of age.

<sup>2</sup>Includes women with 1 or more live births, except that in 1973 babies who did not live with the mother for 2 months or more are not included.

<sup>3</sup>Includes women with 2 or more live births, except that in 1973 babies who did not live with the mother for 2 months or more are not included.

<sup>4</sup>1929-30 for 1973 data.

<sup>5</sup>1950 or before for 1973 data.

of women who had two or more births. In this approach, comparisons are made among women whose opportunity for breast feeding is similar, insofar as it is determined by number of children, so differences in breast feeding among socioeconomic groups can be attributed to factors other than number of children.

### TRENDS IN BREAST FEEDING AMONG CURRENTLY MARRIED WOMEN

By linking the retrospective data from both the 1965 NFS and the 1973 NSFG into one

time series, a much longer trend analysis is possible than with either survey alone. In order to compare the 1973 NSFG with the 1965 NFS, the NSFG sample has been restricted to currently married women, the population represented by the 1965 NFS. Table A shows the proportion of mothers who breast fed their first and second children, using both the 1965 NFS data and 1973 NSFG data, according to birth cohort of women (i.e., the group of women born in the same period of years) and year of birth of infant.

In general, the discussion below directs attention to the larger differences and broader patterns which may be inferred with confidence to reflect trends in behavior. There are several reasons for exercising such caution in inferring trends from these data. In particular, it should be noted that the samples of the earliest cohorts in both surveys underrepresent women in those cohorts who married relatively late in life. Thus, comparisons of those cohorts with later cohorts are affected by differences in average marriage age as well as differences in breast feeding behavior. Also, comparisons of the 1965 NFS with the 1973 NSFG may reflect not only differences in breast feeding practice, but also some differences in the surveys themselves—sampling variability, minor differences in question wording, and changes in the population represented due to aging or marrying. These aspects of the data are discussed further in appendix I of this report.

Both the 1965 NFS and 1973 NSFG data show a dramatic decline in the proportion of women who have breast fed their children. The downward trend is evident for both first and second babies, for trends arranged by birth cohorts of women, and by year of birth of infants. According to the 1965 NFS, 68.3 percent of women in the 1911-15 birth cohort breast fed their first child, but this figure dropped to 34.8 percent of women born in the early 1940's. The NSFG data show a continuing decline in breast feeding among women born in the late 1940's and in the 1950's. Only about one-quarter of the women in these recent cohorts had breast fed their first child.

The cohort trend in breast feeding of second children is comparable to that of first births,

though at lower levels. For instance, almost two-thirds of the women in the 1916-20 birth cohort breast fed their first child, but only one-half breast fed their second child. For the more recent cohort of NFS women, born from 1941 to 1945, over one-third breast fed their first child, but only one-quarter breast fed their second child. For the youngest cohorts in the NSFG sample, only about one-fifth of the mothers breast fed their second child.

According to the 1965 NFS, the period trend, with data arranged by year of birth of the infant, shows a similar decline in breast feeding, from over 70 percent of first-born babies in the 1930's to slightly above 30 percent in the early 1960's. The 1973 NSFG data show a similar decline, with a leveling off for the most recent periods. In the early 1960's, 38.0 percent of first-born babies were breast fed; this dropped to 28.3 percent in the late 1960's, but it rose slightly to 29.1 percent for the 1971-73 period. This rise is not statistically significant, but it may suggest an approaching end to the long-term secular decline in the proportion of mothers who breast feed their infants. (See appendix I for a discussion of standards of statistical reliability used in this report.)

A comparable downward trend with a slight recent reversal is also evident in the data for second births. The differential between first and second births noted in the cohort trends, with mothers being less likely to breast feed second children, also is evident in the data arranged by periods, or birth dates of infants. For the most recent periods, about 28-29 percent of mothers breast fed their first child but only about 23-24 percent breast fed their second child.

Table B shows the proportion of women who breast fed their infants, divided into two duration categories—less than 3 months and 3 months or more. Breast feeding of longer duration is more likely to have the effects on mother and child previously mentioned—immunization of the baby from some diseases, better nutrition of the baby, reduced risk of pregnancy for the mother, and reduced risk of breast cancer for the mother. Investigators do not know definitely that breast feeding has all of these effects, and even less is known about the amount of breast feeding which may be necessary to produce an

Table B. Percent of ever-married women 15-44 years of age who breast fed their first or second child, by duration of breast feeding, birth cohort of mother, and year of birth of child: United States, 1973

Birth cohort of mother and year of birth of child	Duration of breast feeding			Duration of breast feeding		
	All durations	Less than 3 months	3 months or more	All durations	Less than 3 months	3 months or more
	Percent breast feeding first child <sup>1</sup>			Percent breast feeding second child <sup>2</sup>		
All women .....	38.6	25.6	13.0	27.0	17.0	10.0
<u>Birth cohort of mother</u>						
1951-59 .....	25.1	21.1	4.0	17.8	13.7	4.1
1946-50 .....	25.4	18.7	6.7	19.4	14.2	5.2
1941-45 .....	37.8	25.4	12.4	26.2	17.1	9.1
1936-40 .....	43.2	27.6	15.6	26.7	16.1	10.6
1931-35 .....	50.0	31.3	18.7	31.9	19.8	12.1
1929-30 .....	49.6	29.4	20.2	34.4	18.8	15.6
<u>Year of birth of child</u>						
1971-73 .....	28.7	21.6	7.1	23.5	16.4	7.1
1966-70 .....	27.9	19.7	8.2	22.1	15.2	6.9
1961-65 .....	37.5	25.2	12.3	24.7	15.4	9.3
1956-60 .....	42.9	29.5	13.4	29.1	18.5	10.6
1951-55 .....	49.8	31.7	18.1	34.2	19.7	14.5
1950 or before .....	59.9	27.9	32.0	56.7	27.1	29.6

<sup>1</sup>Includes women with 1 or more live births whose first baby lived with them for 2 months or more.

<sup>2</sup>Includes women with 2 or more live births whose second baby lived with them for 2 months or more.

effect. It is estimated, however, that the contraceptive effect of nursing is not likely to reduce fertility unless breast feeding continues for at least 3 months.<sup>4</sup> For that reason, 3 months has been used to divide long- from short-term breast feeding in this study. Because long-term breast feeding is more likely to affect mother and child, trends in its incidence are especially significant.

Only the 1973 NSFG sample is used in table B. Unlike table A, in which previously married women were excluded to make the NSFG sample comparable to the NFS sample, table B includes all women who had been married, whether or not they were married at the time of interview. Because of that difference in sample coverage, the proportions who breast fed at all differ somewhat in tables A and B.

The figures in table B show a greater decline in the proportions reporting long-term breast feeding than in the overall rate. Among first births to the oldest cohorts of women in the 1973 NSFG, those born in the late 1920's and early 1930's, there was a nearly equal distribu-

tion of short-term and long-term breast feeding. For instance, about 50 percent of all women in these cohorts breast fed their first child, and about 2 out of 5 of them breast fed for 3 months or more. Among the youngest cohorts of women, those born in the late 1940's and 1950's, the overall rate of breast feeding had been reduced by half to only 25 percent of all women, and only 1 out of 5 of them continued breast feeding for 3 months or more. For second children, the same downward trend was evident, with a greater decrease in long-term breast feeding than short-term breast feeding.

The pattern by year of birth of the child parallels that by birth cohort of the mother—a steep decline in the fraction of women who breast fed their infants for 3 months or more. Furthermore, the decline continues into the 1970's, with no sign of an increase in long-term breast feeding for first children. (The small increase for second children is not statistically significant.) The trend is reaching such a low point, however, that further decreases must be very small; less than 10 percent of mothers in recent

years have breast fed their first or second infants for 3 months or more.

Two aspects of the trends in breast feeding deserve emphasis—the large and rapid decline in breast feeding during the last quarter century and the slowing and possible reversal of that decline in the most recent period. Full analysis of the causes and consequences of those trends is beyond the scope of this report, but mention can be made of some factors which would be included in such an analysis.

The change from breast feeding to bottle feeding was made possible by improvements in the technology of bottle feeding, such as pre-mixed, water-soluble, powdered formula and the collapsible, sanitary, disposable plastic bottle, which made bottle feeding convenient, safe, and inexpensive. Additional motivation of mothers to bottle feed was provided by their increased opportunities in the workplace and elsewhere outside the home. Responding to those opportunities required more frequent separation of mothers from their infants, which could be accommodated better by bottle feeding than breast feeding. Also, bottle feeding was viewed as the “modern” feeding method, which encouraged its adoption.<sup>10</sup>

As a consequence of the decline in breast feeding, babies and mothers are now much more dependent on bottle feeding technology, requiring that high standards of quality in production and distribution be maintained. Also, to the extent that breast feeding previously provided some protection against unwanted and untimely pregnancy by its suppression of ovulation, that protection must now be foregone or provided by some other contraceptive means. A further possible consequence of the decline in breast feeding is an increased risk of breast cancer. While the role of breast feeding in cancer etiology is not now considered by leading researchers to be very important,<sup>6,7</sup> it is still under investigation.<sup>11</sup> So long as it is under investigation, some apprehension will remain about the effect of the decline in breast feeding on cancer risks. Finally, the decline in breast feeding may have consequences for the emotional development of children. In the opinion of some developmental psychologists, breast feeding encourages the kind of mother-child interaction which is necessary for normal psychological development in

the infant. Of course, that interaction can and usually does occur where bottle feeding is practiced. However, specialists are concerned that the caring behavior needed to substitute for breast feeding may not be provided to all bottle-fed babies.<sup>12,13</sup>

The slowing and possible reversal of the decline in breast feeding, if confirmed by subsequent studies, suggests that publicity given the benefits of breast feeding in recent years, supported by many medical specialists, may be affecting the choices of mothers and their doctors. Also, the recent growth of organizations to promote breast feeding in the United States may be succeeding in redefining breast feeding. No longer is it denigrated as “old fashioned”; instead, it is acclaimed as “natural,” making its practice more socially rewarding.<sup>10</sup>

## DIFFERENTIALS IN BREAST FEEDING

As an aspect of child rearing, breast feeding might be expected to vary among social and cultural groups that have different ideas about how mothers should care for their children, ideas which are taught to each new generation. Also, the amount of time and money available to various socioeconomic groups and the advice they get from doctors, nurses, and other professionals might influence their breast feeding practices. In order to highlight some of these variations among groups, table C shows the proportions of ever-married mothers who breast fed their first child and the proportions who breast fed for 3 months or more, according to the year of birth of the child and selected cultural, social, and economic characteristics.

The characteristics selected are religion, race and ethnicity, farm background, geographic region, education, occupation, poverty level income, and work experience. The first four characteristics are established at birth or in childhood for many Americans and indicate membership in social groups which have some distinctive customs. In comparing breast feeding practices of women in these groups, there is an implicit hypothesis that they are influenced by distinctive breast feeding customs learned in the group.

Table C. Percent of ever-married women 15-44 years of age with 1 birth or more who breast fed their first child, by duration of breast feeding, year of first birth, and selected characteristics: United States, 1973

Selected characteristic	Breast fed any duration							Breast fed 3 months or more						
	All women	Year of first birth						All women	Year of first birth					
		1971-73	1966-70	1961-65	1956-60	1951-55	1950 or before		1971-73	1966-70	1961-65	1956-60	1951-55	1950 or before
All women.....	38.6	28.7	27.9	37.5	42.9	49.8	59.9	13.0	7.1	8.2	12.3	13.4	18.1	32.0
<b>Religion</b>														
Catholic.....	34.9	23.5	27.3	38.7	38.8	40.9	52.7	10.8	5.9	7.6	10.9	13.4	14.8	16.3
Protestant.....	40.3	29.4	28.5	36.0	44.5	54.7	61.0	13.8	7.0	8.2	11.8	13.4	19.8	35.2
Jewish.....	25.2	*20.7	*18.6	40.9	23.1	*17.4	---	10.6	0.0	*12.6	*23.8	*4.1	*6.8	---
Other or none.....	44.4	48.2	27.0	48.4	57.1	42.8	82.3	17.2	15.6	9.7	22.6	18.4	*16.7	48.8
<b>Race and ethnicity</b>														
White.....	38.9	30.2	29.4	38.9	43.0	48.8	56.2	12.5	7.6	8.5	12.4	12.7	16.7	28.0
Black.....	35.7	11.4	13.7	23.8	42.1	59.1	72.6	16.7	*1.5	*3.9	9.5	18.0	28.4	45.4
Hispanic origin <sup>1</sup> .....	43.1	19.3	35.2	39.1	55.1	57.7	73.2	20.1	*3.7	11.2	16.3	31.7	33.4	37.7
<b>Farm background</b>														
Farm.....	41.5	24.3	26.7	32.9	44.8	44.4	66.9	19.0	6.3	8.3	12.8	20.4	26.9	42.7
Nonfarm.....	37.6	29.8	28.2	39.1	42.2	47.6	54.5	10.9	7.3	8.1	12.1	10.5	13.8	23.8
<b>Geographic region</b>														
Northeast.....	32.2	23.1	26.9	30.6	31.3	41.5	63.1	10.1	6.9	11.0	9.8	7.6	10.5	26.5
North Central.....	37.0	26.5	27.4	37.4	42.5	43.3	59.4	10.0	6.3	5.0	11.2	11.3	11.0	26.4
South.....	37.6	21.1	22.4	35.1	43.8	57.4	63.9	15.4	4.7	6.1	12.3	17.2	28.2	40.3
West.....	49.1	53.9	38.2	49.5	54.2	54.7	50.5	16.1	13.6	12.0	16.4	16.6	19.0	25.6
<b>Education</b>														
Elementary school, 8 years or less.....	48.1	18.1	32.2	40.1	53.0	62.3	63.1	25.0	*2.1	12.2	15.1	27.0	38.3	39.6
High school, 9-11 years.....	34.7	15.7	17.2	28.7	39.8	49.5	60.4	13.3	5.5	2.7	7.5	15.5	22.6	31.2
High school, 12 years.....	33.3	24.8	23.3	32.2	39.9	44.7	54.6	8.6	4.9	5.7	9.5	8.6	11.9	22.2
College, 13-15 years.....	46.5	43.5	35.2	50.4	47.6	57.0	69.7	14.4	9.4	9.8	19.9	13.6	12.6	54.6
College, 16 years or more.....	56.0	52.1	57.1	69.2	50.2	45.8	55.6	21.6	19.1	25.4	26.4	19.1	12.7	*18.6
<b>Occupation</b>														
Never worked.....	34.0	13.4	24.4	33.8	47.4	43.6	62.1	16.4	*5.3	8.9	17.4	21.9	21.2	41.9
Professionals and managers.....	50.6	49.2	47.3	48.8	51.6	54.5	61.4	19.2	17.2	20.2	17.6	16.9	20.9	33.4
Sales and clerical workers.....	34.2	25.3	24.6	35.1	39.2	43.3	59.1	9.1	5.2	5.8	10.3	9.8	11.0	26.8
Service workers.....	42.1	32.6	27.7	39.5	44.5	56.2	66.7	14.3	7.0	6.3	11.1	13.1	24.1	36.2
Craftworkers, operatives, and farmworkers.....	36.1	18.6	21.0	33.2	40.9	53.5	53.4	14.2	*2.8	5.9	12.2	16.1	22.6	30.0
<b>Poverty level</b>														
Below poverty income.....	44.6	31.3	30.1	34.5	53.3	63.1	67.4	21.1	*5.8	10.9	13.7	27.2	34.5	45.2
100-199 percent.....	39.2	31.4	22.5	37.3	46.5	54.1	66.9	13.5	5.7	3.6	14.4	14.9	23.0	38.4
200-299 percent.....	34.5	25.8	26.6	35.2	38.0	45.5	55.7	10.3	7.1	5.9	10.3	10.5	15.7	30.3
300 percent or more.....	39.4	28.3	31.7	40.0	41.3	46.9	54.6	12.3	8.5	12.1	12.0	10.8	13.2	23.8
<b>Employment between first and second births</b>														
No second birth.....	28.7	27.9	24.5	28.4	38.7	43.8	67.8	7.8	5.6	6.5	10.9	12.6	17.8	36.0
Employed between births.....	40.9	38.2	28.3	40.8	43.9	50.0	54.7	12.2	*13.5	7.8	9.0	13.8	15.5	26.0
Not employed between births.....	42.1	31.9	30.4	37.4	43.0	50.2	62.4	16.0	17.6	9.9	14.9	13.2	19.2	35.3

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women of all racial groups.

The second set of characteristics—education, occupation, poverty level income, and work experience—change during the lifetimes of most Americans and affect behavior not so much through custom as through the opportunities they open or close. The implicit hypothesis in comparisons involving these characteristics is that breast feeding practice is a matter of choice among alternatives determined by each woman's current socioeconomic situation.

The two types of characteristics and the hypotheses on which they bear, which might be called the "cultural" and "socioeconomic" hypotheses, were identified by Hirschman and Sweet<sup>8</sup> in the work previously cited. They concluded from their analyses that neither hypothesis was sufficient in itself to explain observed differences in breast feeding, but both hypotheses and possibly others would be required for a full explanation. In this report, no attempt is

made to test these hypotheses formally, but they have guided the selection of the variables for analysis and presentation.

### **Religion**

It will be noted in table C that among major religious groups, Protestants are somewhat more likely to breast feed than Catholic women, and Jewish women are least likely. For women in the remaining category of religion "Other or none," the proportions who breast fed were about the same as those for Protestants. The downward trend over the past decades is evident for both Protestants and Catholics, although Protestants show a small upturn (not statistically significant) in the early 1970's, while Catholics do not. The small samples of women in the Jewish and the "Other or none" categories in some years preclude interpretation of their trends.

### **Race and Ethnicity**

The overall downward trend in breast feeding is evident for all three racial and ethnic categories in table C—black, white, and Hispanic—but the decline for black women is greatest. For the earliest periods, the majority of black women breast fed their first babies, and they were considerably more likely than white women to breast feed their babies for 3 months or more. But by the early 1970's, only 11.4 percent of black women breast fed their first child, and only 1.5 percent breast fed for 3 months or more, compared with 30.2 and 7.6 percent of white women in the same categories. The decline of breast feeding among Hispanic women has been steeper than that among white women but not as precipitous as among black women. A modest rise in breast feeding (not statistically significant) in the 1970's was present only for white women and was limited to those breast feeding for less than 3 months.

### **Farm Background**

The data in table C indicate that before the 1950's, women who had grown up on farms were more likely than nonfarm women to breast feed their children, especially for 3 months or more. But from the late 1960's, continuing into the 1970's, the differential has been reversed,

with women of nonfarm background having a higher proportion breast feeding, although the differences are not statistically significant. Women with farm origins continued the downward trend into the 1970's, while among women without a farm background the proportion who breast fed their first babies did not change significantly.

### **Geographic Region**

There were only minor differentials by geographic region for the earliest two periods in the time series in table C. But as the secular decline in breast feeding began in the 1950's and continued into the 1960's, the West Region was relatively unaffected. Over 50 percent of women living in the West Region breast fed their first baby in the early 1970's, 13.6 percent for 3 months or more—at least twice the proportions in other regions of the country. From the late 1960's to the early 1970's, an upward trend in breast feeding was evident in the West Region, but not in any of the other regions, except for a small, nonsignificant increase in the proportion of women breast feeding for 3 months or more in the North Central Region.

### **Education**

For births occurring in 1950 or earlier, there were small differences in breast feeding between the educational attainment categories shown in table C, with a tendency for breast feeding to be less common among women who completed high school. In the late 1950's, there emerged a U-shaped relationship between breast feeding and education. Breast feeding was more likely among women with the least or most years of education, while women of intermediate education were least likely to breast feed. The pattern continued to change, and in recent years the tendency has been for breast feeding to be least common among those with the least education and most common among those with the most, reversing the pattern reported for babies born 25 years earlier. These changes may also be described in this way: In the past generation, breast feeding declined greatly among less educated women, it also declined, but less dramatically, among moderately educated women; and

it changed hardly at all among college educated women.

### **Occupation**

Women are classified by occupation according to the last job they held. The few women in the sample who had never worked outside the home are classified as "never worked." The other occupational groupings in table C are: (1) professionals and managers, (2) sales and clerical workers, (3) service workers, and (4) craft workers, operatives, and farmworkers. It should be noted that the occupation in the last job may not reflect exactly the economic activity of the woman after the birth of her first or second child, the periods for which her breast feeding behavior is reported.

There were only small, nonsignificant differentials in breast feeding by occupation for the earlier periods. By the late 1950's, a downward trend was evident for women in all occupations except those who were "professionals and managers" and those who "never worked." In the "never worked" category, the decline began later, in the early 1960's, and accelerated in the next decade. Since the early 1950's there is no evidence of a consistent downward trend in the proportion of "professionals and managers" who breast fed their first babies, either at all or 3 months or more.

### **Poverty Level**

The index of poverty is based on the adequacy of annual family income relative to the size and composition of the family. In addition to those below the poverty level, the index is categorized in table C to show those whose income put them at 100 to 199 percent of the poverty level, 200 to 299 percent, or 300 percent or more. Because the poverty index measures economic status at the time of interview in 1973 or 1974 and may not reflect accurately the economic circumstances at the time of first or second births, its use in analyzing the effects of income differences on breast feeding is limited.

Poor and near-poor women were more likely than other women to breast feed babies born before 1960, but breast feeding has declined more rapidly among poor and near-poor women, so

that in recent years there is less difference between their practice and that of wealthier women. These trends parallel those observed for educational groups, and probably have the same causes, because educational attainment and income are closely related.

### **Employment**

The last variable in table C contrasts women who worked between their first and second births and women who did not. A residual category contains women who had not borne a second baby at the time of interview. For the most recent periods, this residual category contains most of the respondents because too little time had passed between the first birth and the interview for many second births to have occurred.

Since working soon after a birth would tend to reduce opportunities for breast feeding, it might be expected that women who worked between births would report less breast feeding. However, from the early 1950's on there is no association between work and breast feeding of the first child. Women who did not work were more likely than working women to breast feed during the earliest period, but the reverse is true for the most recent period, although the difference is not significant. There are no significant differences in other periods. However, women who did not work were generally more likely than working women to breast feed for more than 3 months. It does not appear that the increase in labor force participation by mothers is the sole cause of the downward trend in breast feeding, because breast feeding has declined among both groups of women, those who worked between births and those who did not.

### **Marital Status, Parity, and Mother's Birth Cohort**

This discussion of breast feeding differentials has been limited to statistics on breast feeding of first-born babies by ever-married women, according to the year of the baby's birth, as shown in table C. Table D shows statistics parallel to those in table C, except that it includes only women who were married at the time of the interview. There is little difference between com-

Table D. Percent of currently married women 15-44 years of age with 1 birth or more who breast fed their first child, by duration of breast feeding, year of first birth, and selected characteristics: United States, 1973

Selected characteristic	Breast fed any duration							Breast fed 3 months or more						
	All women	Year of first birth						All women	Year of first birth					
		1971-73	1966-70	1961-65	1956-60	1951-55	1950 or before		1971-73	1966-70	1961-65	1956-60	1951-55	1950 or before
All women.....	38.4	29.1	28.3	38.0	43.1	48.8	58.9	12.8	7.3	8.7	12.6	13.2	16.8	31.8
<b>Religion</b>														
Catholic.....	34.3	22.8	26.7	39.0	40.0	39.1	47.6	10.8	6.4	8.4	10.8	13.1	14.2	13.7
Protestant.....	40.2	30.6	29.1	36.7	44.3	44.3	61.2	13.6	7.3	8.6	12.3	13.4	18.3	35.2
Jewish.....	26.5	*20.7	*24.2	42.9	32.3	*17.4	...	11.5	-	*16.5	25.0	*4.7	*6.8	...
Other or none.....	42.9	45.5	27.8	46.7	58.9	40.7	72.8	15.8	13.2	9.6	22.1	*14.2	*14.9	72.8
<b>Race and ethnicity</b>														
White.....	38.8	30.7	29.4	38.8	43.3	48.3	56.0	12.4	7.8	8.9	12.7	12.6	15.9	28.6
Black.....	32.5	*8.8	14.2	24.0	39.4	56.3	74.8	15.2	*1.6	*4.2	*7.1	19.9	26.1	49.7
Hispanic origin <sup>1</sup> .....	41.9	17.7	34.7	38.3	53.3	57.9	69.3	20.0	*4.3	12.5	15.8	30.5	33.5	37.7
<b>Farm background</b>														
Farm.....	40.7	23.8	27.1	31.5	44.9	54.8	66.4	18.2	5.9	8.8	12.4	21.1	24.8	42.5
Nonfarm.....	37.6	30.5	28.6	40.1	42.4	45.9	53.3	10.9	7.7	8.7	12.6	10.0	12.9	23.9
<b>Geographic region</b>														
Northeast.....	31.5	25.3	28.4	28.8	31.1	39.6	57.8	10.2	7.5	12.3	8.7	7.8	11.2	22.3
North Central.....	37.2	27.3	28.0	38.6	42.4	42.9	57.3	9.6	6.1	5.5	11.8	11.3	8.0	24.8
South.....	36.7	21.4	21.7	35.7	43.8	55.9	64.0	15.1	5.0	6.4	13.0	17.1	27.4	41.8
West.....	49.5	51.9	38.8	51.1	54.9	54.7	52.1	15.8	13.7	12.2	17.1	15.5	17.6	26.8
<b>Education</b>														
Elementary school, 8 years or less.....	45.6	16.1	33.7	38.6	49.7	59.8	57.4	23.9	*2.5	14.6	15.4	23.0	36.4	39.6
High school, 9-11 years.....	34.5	18.5	15.2	28.3	39.7	47.6	63.6	13.1	6.5	*2.5	7.7	15.5	21.1	30.8
High school, 12 years.....	33.3	24.8	23.3	32.4	40.2	45.8	52.7	8.7	5.1	5.9	9.8	8.8	12.0	22.4
College, 13-15 years.....	46.5	41.7	35.7	51.8	48.7	57.1	67.1	14.2	8.5	10.4	20.0	13.3	10.9	58.2
College, 16 years or more.....	56.3	52.9	57.6	72.2	52.9	34.0	43.6	21.8	18.7	25.0	27.3	22.0	*5.8	*23.6
<b>Occupation</b>														
Never worked.....	35.3	14.5	27.3	36.2	47.1	44.6	58.6	16.7	*6.0	10.2	18.9	20.8	23.5	34.6
Professionals and managers..	51.1	48.8	48.2	51.9	53.4	50.5	61.4	19.6	16.5	21.2	18.5	17.2	19.2	40.0
Sales and clerical workers....	33.8	24.9	24.6	34.7	39.1	43.4	56.0	8.5	5.2	5.7	10.2	9.1	9.1	25.7
Service workers.....	41.7	34.2	28.1	40.4	43.9	55.1	68.1	14.0	8.0	7.2	11.6	12.7	22.9	37.3
Craftworkers, operatives, and farmworkers.....	35.5	19.5	20.2	32.5	41.1	52.5	53.1	14.0	*3.1	6.4	12.3	17.2	22.6	29.0
<b>Poverty level</b>														
Below poverty income.....	47.2	37.5	29.4	42.2	53.5	67.1	63.5	24.3	*7.1	17.1	19.5	27.6	37.5	47.7
100-199 percent.....	39.3	31.2	23.5	35.1	49.1	56.3	68.9	13.8	5.5	3.5	14.6	16.9	24.3	41.8
200-299 percent.....	34.4	26.2	27.0	36.2	37.2	43.6	61.7	10.2	7.4	6.2	10.5	10.0	14.9	32.8
300 percent or more.....	39.0	28.6	31.6	40.0	42.1	45.8	52.2	12.1	8.5	12.1	11.8	11.1	12.1	23.8
<b>Employment between first and second births</b>														
No second birth.....	28.9	28.0	26.0	26.8	39.3	43.4	66.2	8.3	5.8	7.4	12.3	15.3	14.9	44.3
Employed between births.....	40.3	39.2	28.2	41.0	44.5	49.8	50.6	11.0	*11.6	7.9	7.5	13.6	12.7	24.7
Not employed between births.....	41.8	35.6	30.0	38.4	42.8	48.8	62.8	16.0	19.8	10.3	15.9	12.7	18.6	34.7

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women of all racial groups.

parable statistics in the two tables because most ever-married women were currently married, and breast feeding experiences of currently married and previously married women are not very different. The data on currently married women are presented in table D so that readers may compare them with the data previously published by Hirschman and Sweet,<sup>8</sup> but because they differ so little from the data for ever-

married women, the detailed tables (tables 1-12) are presented for ever-married women only. The detailed tables (tables 5-8) also show differentials among the same socioeconomic and cultural groups for second-born babies and for different birth cohorts of mothers. The differentials and trends found in the detailed tables are similar to those included in the text but differ in some respects.

## CONCLUSIONS

Two general conclusions can be made from the findings in this study. First, even if breast feeding has significant effects on individual mothers or children, its overall impact in contemporary American society is relatively minor because in recent years less than one-third of mothers have breast fed their first child, and less than one-tenth have breast fed for 3 months or more. The fractions are even lower for second births. This means that the majority of American infants are dependent upon bottle fed, com-

mercially prepared formulas or cow's milk for their primary source of nutrition during their early months of life.

Second, the practice of breast feeding today is most common among relatively advantaged women in society. Among women with college degrees and those who work in high-status white-collar occupations, about one-half breast fed their first baby and almost one-fifth continued for 3 months or more. Whether these higher-than-average levels of breast feeding are due to socioeconomic and cultural factors or different medical advice cannot be ascertained from these data.

## REFERENCES

- <sup>1</sup>Jelliffe, D. B., and Jelliffe, E. F. P.: Human milk, nutrition, and the world resource crisis, in Philip H. Adelson, ed., *Food: Politics, Economics, Nutrition and Research*. Washington, D.C. American Association for the Advancement of Science, 1975, pp. 65-69.
- <sup>2</sup>Jain, A. K., et al.: Demographic aspects of lactation and postpartum amenorrhea. *Demography* 7(2): 255-271, May 1970.
- <sup>3</sup>Saxena, P. C.: Breast-feeding: Its effects upon postpartum amenorrhea. *Soc Biol.* 24(1):45-51, Spring 1977.
- <sup>4</sup>Rolland, R.: Bibliography (with review) on contraceptive effects of breast-feeding. *Bibliography Reproduction* 28(1):1-4, July 1976.
- <sup>5</sup>Kitagawa, E. M., and Hauser, P. M.: *Differential Mortality in the United States: A Study in Socioeconomic Epidemiology*. Cambridge, Mass. Harvard University Press, 1973.
- <sup>6</sup>Correa, P.: The epidemiology of cancer of the breast. *Am J Clin Pathol.* 64(6):720-727, Dec. 1975.
- <sup>7</sup>MacMahon, B., and Brown, J.: Etiology of human breast cancer: A review. *Journal of the American Cancer Institute* 50(1):21-42, Jan. 1973.
- <sup>8</sup>Hirschman, C., and Sweet, J. A.: Social background and breast-feeding among American mothers. *Soc Biol.* 21(1):39-57, Spring 1974.
- <sup>9</sup>Ryder, N., and Westoff, C.: *Reproduction in the United States*. Princeton, New Jersey. Princeton University Press, 1971.
- <sup>10</sup>Jelliffe, D. B.: Community and sociopolitical considerations of breast-feeding, in *Breast-feeding and the Mother*, Ciba Foundation Symposium 45 (new series). New York. Elsevier/Excerpta Medica/North-Holland, 1976. pp. 159-172.
- <sup>11</sup>Ing, R., and Ho, J. H. C.: Unilateral breast-feeding and breast cancer. *The Lancet* 8029:124-127, July 16, 1977.
- <sup>12</sup>Fraiberg, S.: *Every Child's Birthright: In Defense of Mothering*. New York. Basic Books, Inc., 1977.
- <sup>13</sup>Rossi, A. S.: A biosocial perspective on parenting. *Daedalus* 106:1-31, 1977.
- <sup>14</sup>National Center for Health Statistics: National Survey of Family Growth, Cycle I: Sample design, estimation procedures, and variance estimation, by D. K. French. *Vital and Health Statistics*. Series 2-No. 76. DHEW Pub No. (PHS) 78-1350. Public Health Service. Washington. U.S. Government Printing Office, Jan. 1978.
- <sup>15</sup>National Center for Health Statistics: Replication: An approach to the analysis of data from complex surveys, by P. J. McCarthy. *Vital and Health Statistics*. PHS Pub No. 1000-Series 2-No. 14. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1966.

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Table 1. Percent of ever-married women 15-44 years of age with 1 birth or more who breast fed their first child, by birth cohort of mother and selected characteristics: United States, 1973

Selected characteristic	Birth cohort of mother						
	Total	1951-59	1946-50	1941-45	1936-40	1931-35	1929-30
All women.....	38.6	25.1	25.4	37.8	43.2	50.0	49.6
<u>Religion</u>							
Catholic.....	34.9	23.7	24.2	35.5	38.9	43.8	35.8
Protestant.....	40.3	25.5	25.5	38.0	44.7	53.3	56.4
Jewish.....	25.2	-	-	40.3	35.4	21.9	-
Other or none.....	44.4	23.8	34.3	49.5	58.2	58.6	53.8
<u>Race and ethnicity</u>							
White.....	38.9	27.1	26.6	38.9	42.7	48.9	48.3
Black.....	35.7	13.8	13.1	27.6	46.3	62.1	59.5
Hispanic origin <sup>1</sup> .....	43.1	29.2	33.0	40.0	43.8	62.3	58.8
<u>Farm background</u>							
Farm.....	41.5	26.4	24.3	35.9	43.3	55.6	49.3
Nonfarm.....	37.6	24.8	25.7	38.4	43.2	47.2	49.8
<u>Geographic region</u>							
Northeast.....	32.2	19.6	19.3	22.8	32.7	40.6	42.4
North Central.....	37.0	24.6	23.3	35.6	43.7	45.3	49.5
South.....	37.6	18.2	22.5	36.4	42.3	56.2	54.3
West.....	49.1	42.5	38.8	47.8	44.4	57.4	52.8
<u>Education</u>							
Elementary school, 8 years or less.....	48.1	22.3	30.9	47.6	53.3	58.4	62.3
High school, 9-11 years.....	34.7	19.7	18.9	32.7	37.0	54.7	51.7
High school, 12 years.....	33.3	26.7	21.3	30.0	39.5	43.9	43.6
College, 13-15 years.....	46.5	47.1	35.6	46.2	45.7	58.1	50.4
College, 16 years or more.....	56.0	*25.0	50.0	60.9	63.4	47.1	55.1
<u>Occupation</u>							
Never worked.....	34.0	12.5	28.8	35.9	46.1	49.8	60.4
Professionals and managers.....	50.6	38.5	33.6	54.8	57.8	51.6	51.5
Sales and clerical workers.....	34.2	28.2	22.2	31.4	39.2	45.3	41.3
Service workers.....	42.1	32.9	29.4	39.1	42.3	56.1	66.1
Craftworkers, operatives, and farmworkers.....	36.1	15.7	22.3	35.8	40.0	51.9	46.9
<u>Poverty level</u>							
Below poverty income.....	44.6	32.8	27.3	43.2	54.8	58.5	59.1
100-199 percent.....	39.2	25.5	24.6	36.2	44.6	59.9	56.6
200-299 percent.....	34.5	21.8	25.4	34.9	38.7	45.5	41.5
300 percent or more.....	39.4	21.8	25.3	39.3	42.2	46.4	48.8
<u>Employment between first and second birth</u>							
No next birth.....	28.7	25.8	23.2	31.5	39.5	42.0	31.2
Employed between births.....	40.9	22.2	28.3	39.1	46.4	51.5	43.4
Not employed between births.....	42.1	24.3	25.6	39.3	41.9	50.7	54.4

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 2. Percent of ever-married women 15-44 years of age with 1 birth or more who breast fed their first child for 3 months or more, by birth cohort of mother and selected characteristics: United States, 1973

Selected characteristic	Birth cohort of mother						
	Total	1951-59	1946-50	1941-45	1936-40	1931-35	1929-30
All women.....	13.0	4.0	6.7	12.4	15.6	18.7	20.2
<u>Religion</u>							
Catholic.....	10.8	*4.5	6.5	10.2	12.4	16.7	9.0
Protestant.....	13.8	3.3	6.8	12.6	16.7	19.8	25.2
Jewish.....	10.6	-	-	*23.3	*16.2	*5.4	-
Other or none.....	17.2	*10.7	8.6	22.9	21.9	26.0	*19.4
<u>Race and ethnicity</u>							
White.....	12.5	4.6	6.7	12.8	14.2	16.8	19.4
Black.....	16.7	*1.2	5.4	9.7	25.6	34.0	25.0
Hispanic origin <sup>1</sup> .....	20.1	*4.4	15.7	14.5	21.9	33.3	44.2
<u>Farm background</u>							
Farm.....	19.0	*5.9	7.1	14.1	19.0	28.9	32.1
Nonfarm.....	10.9	3.6	6.6	11.9	14.1	13.7	15.2
<u>Geographic region</u>							
Northeast.....	10.1	*2.2	6.1	11.1	10.1	13.5	12.6
North Central.....	10.0	*2.2	4.6	10.9	14.0	12.6	13.0
South.....	15.4	*2.3	6.1	11.7	19.1	28.5	29.8
West.....	16.1	10.8	11.2	17.0	17.8	16.8	26.8
<u>Education</u>							
Elementary school, 8 years or less.....	25.0	*3.8	13.6	19.8	29.3	34.9	36.2
High school, 9-11 years.....	13.3	3.6	5.2	10.5	15.0	25.6	22.6
High school, 12 years.....	8.6	4.0	4.4	7.7	11.4	11.5	14.4
College, 13-15 years.....	14.4	*6.6	9.8	16.1	13.2	17.1	21.5
College, 16 years or more.....	21.6	*25.0	15.9	25.7	24.9	18.2	18.8
<u>Occupation</u>							
Never worked.....	16.4	*3.7	11.0	20.2	18.4	33.2	*12.9
Professionals and managers.....	19.2	*7.3	10.3	20.9	20.9	21.4	22.5
Sales and clerical workers.....	9.1	4.6	4.8	8.8	12.2	10.9	14.1
Service workers.....	14.3	4.9	7.0	9.9	18.2	24.8	24.9
Craftworkers, operatives, and farmworkers.....	14.2	*1.8	7.4	13.5	14.7	22.4	26.6
<u>Poverty level</u>							
Below poverty income.....	21.1	*4.8	10.8	19.7	29.3	35.5	25.0
100-199 percent.....	13.5	4.0	5.8	9.8	17.4	25.7	28.4
200-299 percent.....	10.3	*2.4	5.4	10.8	11.5	15.4	22.4
300 percent or more.....	12.3	5.7	7.2	13.3	13.4	13.8	16.3
<u>Employment between first and second birth</u>							
No next birth.....	7.8	2.8	4.9	10.8	19.1	17.6	*8.5
Employed between births.....	12.2	*1.7	7.7	10.2	14.5	16.5	18.1
Not employed between births.....	16.0	10.5	8.3	14.6	15.6	19.9	22.5

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 3. Percent of ever-married women 15-44 years of age with 1 birth or more who breast fed their first child, by year of first birth and selected characteristics: United States, 1973

Selected characteristic	Year of first birth						
	Total	1971-74	1966-70	1961-65	1956-60	1951-55	1950 or before
All women.....	38.6	28.7	27.9	37.5	42.9	49.8	59.9
<u>Religion</u>							
Catholic.....	34.9	23.5	27.3	38.7	38.8	40.9	52.7
Protestant.....	40.3	29.4	28.5	36.0	44.5	54.7	61.0
Jewish.....	25.2	*20.7	*18.6	40.9	23.1	*17.4	-
Other or none.....	44.4	48.2	27.0	48.4	57.1	42.8	82.3
<u>Race and ethnicity</u>							
White.....	38.9	30.2	29.4	38.9	43.0	48.8	56.2
Black.....	35.7	11.4	13.7	23.8	42.1	59.1	72.6
Hispanic origin <sup>1</sup> .....	43.1	19.3	35.2	39.1	55.1	57.7	73.2
<u>Farm background</u>							
Farm.....	41.5	24.3	26.7	32.9	44.8	44.4	66.9
Nonfarm.....	37.6	29.8	28.2	39.1	42.2	47.6	54.5
<u>Geographic region</u>							
Northeast.....	32.2	23.1	26.9	30.6	31.3	41.5	63.1
North Central.....	37.0	26.5	27.4	37.4	42.5	43.3	59.4
South.....	37.6	21.1	22.4	35.1	43.8	57.4	63.9
West.....	49.1	53.9	38.2	49.5	54.2	54.7	50.5
<u>Education</u>							
Elementary school, 8 years or less.....	48.1	18.1	32.2	40.1	53.0	62.3	63.1
High school, 9-11 years.....	34.7	15.7	17.2	28.7	39.8	49.5	60.4
High school, 12 years.....	33.3	24.8	23.3	32.2	39.9	44.7	54.6
College, 13-15 years.....	46.5	43.5	35.2	50.4	47.6	57.0	69.7
College, 16 years or more.....	56.0	52.1	57.1	69.2	50.2	45.8	55.6
<u>Occupation</u>							
Never worked.....	34.0	13.4	24.4	33.8	47.4	43.6	62.1
Professionals and managers.....	50.6	49.2	47.3	48.8	51.6	54.5	61.4
Sales and clerical workers.....	34.2	25.3	24.6	35.1	39.2	43.3	59.1
Service workers.....	42.1	32.6	27.7	39.5	44.5	56.2	66.7
Craftworkers, operatives, and farmworkers.....	36.1	18.6	21.0	33.2	40.9	53.5	53.4
<u>Poverty level</u>							
Below poverty income.....	44.6	31.3	30.1	34.5	53.3	63.1	67.4
100-199 percent.....	39.2	31.4	22.5	37.3	46.5	54.1	66.9
200-299 percent.....	34.5	25.8	26.6	35.2	38.0	45.5	55.7
300 percent or more.....	39.4	28.3	31.7	40.0	41.3	46.9	54.6
<u>Employment between first and second birth</u>							
No next birth.....	28.7	27.9	24.5	28.4	38.7	43.8	67.8
Employed between births.....	40.9	38.2	28.3	40.8	43.9	50.0	54.7
Not employed between births.....	42.1	31.9	30.4	37.4	43.0	50.2	62.4

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 4. Percent of ever-married women 15-44 years of age with 1 birth or more who breast fed their first child for 3 months or more, by year of first birth and selected characteristics: United States, 1973

Selected characteristic	Year of first birth						
	Total	1971-74	1966-70	1961-65	1956-60	1951-55	1950 or before
All women.....	13.0	7.1	8.2	12.3	13.4	18.1	32.0
<u>Religion</u>							
Catholic.....	10.8	5.9	7.6	10.9	13.4	14.8	16.3
Protestant.....	13.8	7.0	8.2	11.8	13.4	19.8	35.2
Jewish.....	10.6	-	*12.6	*23.8	*4.1	*6.8	
Other or none.....	17.2	15.6	9.7	22.6	18.4	*16.7	48.8
<u>Race and ethnicity</u>							
White.....	12.5	7.6	8.5	12.4	12.7	16.7	28.0
Black.....	16.7	*1.5	*3.9	9.5	18.0	28.4	45.4
Hispanic origin <sup>1</sup> .....	20.1	*3.7	11.2	16.3	31.7	33.4	37.7
<u>Farm background</u>							
Farm.....	19.0	6.3	8.3	12.8	20.4	26.9	42.7
Nonfarm.....	10.9	7.3	8.1	12.1	10.5	13.8	23.8
<u>Geographic region</u>							
Northeast.....	10.1	6.9	11.0	9.8	7.6	10.5	26.5
North Central.....	10.0	6.3	5.0	11.2	11.3	11.0	26.4
South.....	15.4	4.7	6.1	12.3	17.2	28.2	40.3
West.....	16.1	13.6	12.0	16.4	16.6	19.0	25.6
<u>Education</u>							
Elementary school, 8 years or less.....	25.0	*2.1	12.2	15.1	27.0	38.3	39.6
High school, 9-11 years.....	13.3	5.5	2.7	7.5	15.5	22.6	31.2
High school, 12 years.....	8.6	4.9	5.7	9.5	8.6	11.9	22.2
College, 13-15 years.....	14.4	9.4	9.8	19.9	13.6	12.6	54.6
College, 16 years or more.....	21.6	19.1	25.4	26.4	19.1	12.7	*18.6
<u>Occupation</u>							
Never worked.....	16.4	*5.3	8.9	17.4	21.9	21.2	41.9
Professionals and managers.....	19.2	17.2	20.2	17.6	16.9	20.9	33.4
Sales and clerical workers.....	9.1	5.2	5.8	10.3	9.8	11.0	26.8
Service workers.....	14.3	7.0	6.3	11.1	13.1	24.1	36.2
Craftworkers, operatives, and farmworkers.....	14.2	*2.8	5.9	12.2	16.1	22.6	30.0
<u>Poverty level</u>							
Below poverty income.....	21.1	*5.8	10.9	13.7	27.2	34.5	45.2
100-199 percent.....	13.5	5.7	3.6	14.4	14.9	23.0	38.4
200-299 percent.....	10.3	7.1	5.9	10.3	10.5	15.7	30.3
300 percent or more.....	12.3	8.5	12.1	12.0	10.8	13.2	23.8
<u>Employment between first and second birth</u>							
No next birth.....	7.8	5.6	6.5	10.9	12.6	17.8	36.0
Employed between births.....	12.2	*13.5	7.8	9.0	13.8	15.5	26.0
Not employed between births.....	16.0	17.6	9.9	14.9	13.2	19.2	35.3

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 5. Percent of ever-married women 15-44 years of age with 2 births or more who breast fed their second child, by birth cohort of mother and selected characteristics: United States, 1973

Selected characteristic	Birth cohort of mother						
	Total	1951-59	1946-50	1941-45	1936-40	1931-35	1929-30
All women.....	27.0	17.8	19.4	26.2	26.7	31.9	34.4
<u>Religion</u>							
Catholic.....	22.5	14.8	16.0	21.7	22.3	27.6	26.3
Protestant.....	29.1	16.2	21.0	27.2	28.6	24.9	38.2
Jewish.....	15.5	-	0.0	40.3	*15.6	*4.4	*14.1
Other or none.....	32.6	*16.9	21.1	39.6	40.1	28.2	*32.3
<u>Race and ethnicity</u>							
White.....	26.7	19.6	20.2	26.9	25.6	30.4	33.2
Black.....	28.9	*11.9	13.2	18.7	26.4	43.5	45.1
Hispanic origin <sup>1</sup> .....	29.9	*6.5	22.3	24.3	30.5	41.5	58.6
<u>Farm background</u>							
Farm.....	31.9	18.2	18.9	26.2	29.4	40.8	44.1
Nonfarm.....	25.2	17.7	19.5	26.2	25.7	27.5	30.1
<u>Geographic region</u>							
Northeast.....	20.5	*12.4	16.2	21.2	16.5	22.4	30.8
North Central.....	24.6	14.8	15.6	26.8	25.5	26.7	29.1
South.....	28.2	16.4	16.6	24.0	28.9	38.2	39.5
West.....	35.2	17.1	30.6	33.7	25.4	39.7	39.4
<u>Education</u>							
Elementary school, 8 years or less.....	32.0	*6.5	18.7	23.9	30.2	43.3	46.8
High school, 9-11 years.....	23.5	16.1	11.2	21.2	22.8	34.1	36.2
High school, 12 years.....	22.8	21.4	18.5	21.9	23.8	24.4	27.6
College, 13-15 years.....	34.5	61.1	33.9	32.6	27.5	42.1	34.9
College, 16 years or more.....	44.2	*100.0	47.7	52.6	47.4	31.9	44.5
<u>Occupation</u>							
Never worked.....	24.8	*1.6	*9.1	26.2	29.9	36.6	79.3
Professionals and managers.....	37.1	43.5	26.1	42.4	37.6	37.1	32.2
Sales and clerical workers.....	23.6	17.5	19.3	20.9	24.0	36.8	30.6
Service workers.....	28.0	27.0	23.7	30.2	26.3	30.0	32.6
Craftworkers, operatives, and farmworkers.....	26.1	*11.4	15.8	21.3	24.0	36.9	41.9
<u>Poverty level</u>							
Below poverty income.....	31.6	20.8	20.7	29.2	33.5	41.1	49.3
100-199 percent.....	27.7	17.1	15.9	21.7	32.3	38.1	45.6
200-299 percent.....	22.6	10.5	20.3	23.7	19.5	27.0	28.3
300 percent or more.....	28.3	29.4	21.4	30.3	26.3	29.5	30.8
<u>Employment between second and third birth</u>							
No next birth.....	22.1	18.7	20.8	25.6	21.6	20.8	20.8
Employed between births.....	30.4	*24.1	17.3	23.9	28.6	41.6	35.0
Not employed between births.....	30.8	*8.1	15.9	28.5	29.5	33.6	42.2

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 6. Percent of ever-married women 15-44 years of age with 2 births or more who breast fed their second child for 3 months or more, by birth cohort of mother and selected characteristics: United States, 1973

Selected characteristic	Birth cohort of mother						
	Total	1951-59	1946-50	1941-45	1936-40	1931-35	1929-30
All women.....	10.0	4.1	5.2	9.1	10.6	12.1	15.6
<u>Religion</u>							
Catholic.....	8.3	*2.6	3.7	7.2	9.9	10.7	10.2
Protestant.....	10.8	*3.9	6.3	9.0	11.0	13.2	18.5
Jewish.....	7.6	-	-	*27.4	*7.6	-	-
Other or none.....	10.3	*8.7	*0.3	19.3	*10.1	*12.5	*2.8
<u>Race and ethnicity</u>							
White.....	9.3	*3.3	5.4	9.5	9.3	10.4	15.0
Black.....	15.3	*7.5	*4.2	6.8	21.2	26.8	22.0
Hispanic origin <sup>1</sup> .....	15.3	0.0	*7.3	13.1	17.4	20.0	49.2
<u>Farm background</u>							
Farm.....	13.5	*4.3	6.0	11.5	11.1	18.6	20.5
Nonfarm.....	8.6	*4.0	4.9	8.4	10.3	8.9	13.5
<u>Geographic region</u>							
Northeast.....	7.7	*4.9	6.1	7.6	5.3	9.3	12.5
North Central.....	9.7	*4.8	*3.1	9.8	11.6	10.9	13.5
South.....	11.4	*3.5	4.6	8.5	14.1	15.5	18.6
West.....	10.5	*3.5	7.7	10.8	9.3	11.6	18.5
<u>Education</u>							
Elementary school, 8 years or less.....	15.1	*1.0	*5.2	10.5	16.1	20.1	25.4
High school, 9-11 years.....	9.5	*1.8	*2.7	6.3	10.9	15.6	20.1
High school, 12 years.....	7.2	*7.7	4.4	6.9	7.6	7.6	12.0
College, 13-15 years.....	11.1	*20.6	8.1	12.1	10.2	11.3	13.7
College, 16 years or more.....	18.6	*100.0	30.4	21.1	19.8	14.6	13.5
<u>Occupation</u>							
Never worked.....	12.6	1.1	*8.2	18.5	*11.7	13.4	*29.0
Professionals and managers.....	14.8	0.0	*9.1	15.5	15.8	14.6	17.0
Sales and clerical workers.....	7.1	*4.9	5.2	6.9	7.7	7.4	9.3
Service workers.....	9.8	*8.2	*2.7	8.3	12.0	13.2	15.6
Craftworkers, operatives, and farmworkers.....	11.6	*0.6	5.7	7.4	10.9	17.0	26.8
<u>Poverty level</u>							
Below poverty income.....	14.3	*1.0	6.4	12.4	18.3	19.6	30.3
100-199 percent.....	10.7	*3.6	4.2	6.8	14.6	16.1	20.7
200-299 percent.....	7.0	*6.9	4.8	7.2	5.4	8.9	12.7
300 percent or more.....	10.2	*8.5	6.2	11.2	9.3	10.2	13.3
<u>Employment between second and third birth</u>							
No next birth.....	7.2	*3.9	5.3	8.9	6.2	7.3	12.9
Employed between births.....	10.6	-	*4.2	7.9	10.5	14.7	15.4
Not employed between births.....	12.7	*7.4	5.4	10.2	13.8	13.6	17.3

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 7. Percent of ever-married women 15-44 years of age with 2 births or more who breast fed their second child, by year of second birth and selected characteristics: United States, 1973

Selected characteristic	Year of second birth						
	Total	1971-74	1966-70	1961-65	1956-60	1951-55	1950 or before
All women.....	27.0	23.5	22.1	24.7	29.1	34.2	56.7
<u>Religion</u>							
Catholic.....	22.5	21.1	16.6	22.1	25.3	29.0	42.1
Protestant.....	29.1	23.9	23.0	26.4	31.9	26.1	59.8
Jewish.....	15.5	*24.7	*27.0	29.9		*14.1	
Other or none.....	32.6	31.5	44.2	21.3	24.1	41.4	*53.6
<u>Race and ethnicity</u>							
White.....	26.7	24.9	22.6	24.9	28.3	32.3	54.3
Black.....	28.9	12.3	12.6	23.3	35.3	49.1	62.6
Hispanic origin <sup>1</sup> .....	29.9	21.8	12.7	33.3	43.0	38.4	67.0
<u>Farm background</u>							
Farm.....	31.9	24.0	19.2	25.8	36.3	42.6	71.0
Nonfarm.....	25.2	23.3	23.0	24.4	25.9	30.0	42.0
<u>Geographic region</u>							
Northeast.....	20.5	23.1	16.8	16.8	18.2	33.2	56.4
North Central.....	24.6	25.1	19.4	22.6	26.1	29.9	49.5
South.....	28.2	17.5	18.9	26.8	33.6	38.3	66.3
West.....	35.2	30.9	35.6	33.4	38.3	34.4	47.0
<u>Education</u>							
Elementary school, 8 years or less.....	32.0	14.5	12.7	27.4	40.1	36.8	66.9
High school, 9-11 years.....	23.5	9.8	14.1	19.8	30.4	32.6	53.6
High school, 12 years.....	22.8	20.3	18.9	22.9	24.0	28.4	49.7
College, 13-15 years.....	34.5	38.8	28.9	31.1	33.5	51.6	*38.9
College, 16 years or more.....	44.2	49.8	53.3	40.0	33.3	45.3	0.0
<u>Occupation</u>							
Never worked.....	24.8	*6.8	19.7	22.5	32.1	31.2	92.2
Professionals and managers.....	37.1	43.8	39.1	30.5	38.4	37.2	*10.5
Sales and clerical workers.....	23.6	21.9	18.8	22.9	24.3	30.8	58.0
Service workers.....	28.0	23.8	26.3	26.8	26.6	34.6	42.6
Craftworkers, operatives, and farmworkers.....	26.1	16.1	12.6	23.0	32.8	37.8	69.4
<u>Poverty level</u>							
Below poverty income.....	31.6	24.0	16.6	30.8	39.5	46.5	56.0
100-199 percent.....	27.7	15.4	18.0	26.0	36.5	40.6	58.6
200-299 percent.....	22.6	25.5	21.6	19.3	21.6	24.7	52.9
300 percent or more.....	28.2	29.1	26.9	25.6	26.6	32.4	57.6
<u>Employment between second and third birth</u>							
No next birth.....	22.1	24.2	21.3	18.3	22.4	23.6	61.6
Employed between births.....	30.4		24.1	26.9	28.8	40.4	58.6
Not employed between births.....	30.8	18.2	22.8	28.5	32.2	34.4	55.0

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 8. Percent of ever-married women 15-44 years of age with 2 births or more who breast fed their second child for 3 months or more, by year of second birth and selected characteristics: United States, 1973

Selected characteristic	Year of second birth						
	Total	1971-74	1966-70	1961-65	1956-60	1951-55	1950 or before
All women.....	10.0	7.1	6.9	9.3	10.6	14.5	29.6
<u>Religion</u>							
Catholic.....	8.3	6.5	3.8	10.2	9.1	11.5	24.2
Protestant.....	10.8	7.7	7.4	8.9	11.5	16.2	30.8
Jewish.....	7.6	-	*19.6	*12.2	-	-	-
Other or none.....	10.3	*6.1	16.1	*5.9	*15.4	*1.4	*23.3
<u>Race and ethnicity</u>							
White.....	9.3	7.5	7.0	9.1	9.8	13.0	21.5
Black.....	15.3	*4.4	*4.8	10.8	18.0	26.1	49.4
Hispanic origin <sup>1</sup> .....	15.3	*7.5	*3.3	22.2	15.6	27.0	51.1
<u>Farm background</u>							
Farm.....	13.5	7.9	7.6	11.6	12.4	22.4	36.3
Nonfarm.....	8.6	7.0	6.6	8.4	9.9	10.7	22.8
<u>Geographic region</u>							
Northeast.....	7.7	7.7	6.2	7.5	7.4	8.4	34.2
North Central.....	9.7	8.7	6.0	9.3	12.0	10.0	29.0
South.....	11.4	6.1	5.5	10.1	12.3	21.4	37.6
West.....	10.5	6.1	10.7	9.8	9.6	15.5	12.8
<u>Education</u>							
Elementary school, 8 years or less.....	15.1	*2.9	*4.2	13.7	14.5	18.8	46.4
High school, 9-11 years.....	9.5	*0.1	3.6	6.2	15.1	16.6	24.4
High school, 12 years.....	7.2	7.3	4.7	7.1	8.4	9.6	*14.7
College, 13-15 years.....	11.1	9.5	12.3	11.5	6.3	20.8	*28.9
College, 16 years or more.....	18.6	19.4	18.9	24.6	13.8	*13.7	0.0
<u>Occupation</u>							
Never worked.....	12.6	*6.8	14.8	10.1	*5.4	*15.6	70.7
Professionals and managers.....	14.8	13.2	13.9	13.3	17.4	15.7	*6.5
Sales and clerical workers.....	7.1	6.4	6.0	8.2	5.0	11.9	*9.8
Service workers.....	9.8	6.5	4.7	8.0	12.7	14.3	25.9
Craftworkers, operatives, and farmworkers.....	11.6	*4.9	4.2	9.4	15.2	18.0	42.8
<u>Poverty level</u>							
Below poverty income.....	14.3	*4.4	5.9	14.5	15.2	25.4	48.9
100-199 percent.....	10.7	3.4	4.3	9.9	16.5	20.6	20.2
200-299 percent.....	7.0	7.3	6.5	4.4	6.7	9.8	29.5
300 percent or more.....	10.2	11.6	9.1	10.4	8.5	11.4	26.0
<u>Employment between second and third birth</u>							
No next birth.....	7.2	6.7	6.3	7.0	7.2	12.2	45.0
Employed between births.....	10.6	0.0	7.8	7.5	11.3	14.2	28.0
Not employed between births.....	12.7	17.7	7.6	12.0	11.9	15.3	28.4

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 9. Number of ever-married women 15-44 years of age with 1 birth or more, by birth cohort of mother and selected characteristics: United States, 1973

Selected characteristic	Birth cohort of mother						
	Total	1951-59	1946-50	1941-45	1936-40	1931-35	1929-30
	Number in thousands						
All women .....	24,454	2,259	4,943	5,391	4,956	5,084	1,821
<u>Religion</u>							
Catholic.....	6,978	528	1,382	1,657	1,444	1,474	494
Protestant.....	16,084	1,592	3,211	3,428	3,245	3,346	1,261
Jewish.....	398	5	55	73	117	112	36
Other or none.....	993	135	294	232	150	152	30
<u>Race and ethnicity</u>							
White.....	21,525	1,895	4,354	4,790	4,398	4,465	1,623
Black.....	2,680	350	546	554	484	553	193
Hispanic origin <sup>1</sup> .....	1,795	203	399	371	408	348	67
<u>Farm background</u>							
Farm.....	6,396	391	1,031	1,278	1,464	1,688	544
Nonfarm.....	18,058	1,868	3,912	4,113	3,492	3,396	1,277
<u>Geographic region</u>							
Northeast.....	5,083	304	910	1,225	1,052	1,131	460
North Central.....	6,461	578	1,267	1,435	1,312	1,361	508
South.....	7,967	906	1,784	1,594	1,537	1,642	503
West.....	4,942	471	982	1,136	1,055	949	349
<u>Education</u>							
Elementary school, 8 years or less.....	2,355	242	356	371	515	635	237
High school, 9-11 years.....	5,243	772	972	1,005	1,066	1,067	360
High school, 12 years.....	11,655	1,103	2,598	2,551	2,339	2,253	811
College, 13-15 years.....	3,099	141	693	847	554	627	236
College, 16 years or more.....	2,101	2	324	616	482	501	176
<u>Occupation</u>							
Never worked.....	1,166	258	234	259	174	202	39
Professionals and managers.....	3,670	73	587	910	799	953	349
Sales and clerical workers.....	9,835	820	2,078	2,245	2,049	1,918	725
Service workers.....	4,965	593	1,050	993	1,046	922	361
Craftworkers, operatives, and farmworkers.....	4,816	515	994	985	888	1,088	347
<u>Poverty level</u>							
Below poverty income.....	2,647	388	548	510	543	543	116
100-199 percent.....	5,578	848	1,159	1,159	1,112	959	343
200-299 percent.....	6,308	586	1,471	1,500	1,269	1,161	322
300 percent or more.....	9,920	438	1,765	2,223	2,032	2,420	1,041
<u>Employment between first and second birth</u>							
No next birth.....	5,710	1,573	1,970	1,000	488	532	148
Employed between births.....	7,006	288	1,365	1,761	1,705	1,412	476
Not employed between births.....	11,736	397	1,609	2,630	2,763	3,140	1,197

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 10. Number of ever-married women 15-44 years of age with 1 birth or more, by year of first birth and selected characteristics: United States, 1973

Selected characteristic	Year of first birth						
	Total	1971-74	1966-70	1961-65	1956-60	1951-55	1950 or before
	Number in thousands						
All women.....	24,454	2,973	5,875	5,103	4,988	4,031	1,484
<u>Religion</u>							
Catholic.....	6,978	855	1,769	1,575	1,393	1,117	269
Protestant.....	16,084	1,888	3,751	3,178	3,324	2,760	1,184
Jewish.....	398	43	68	98	100	89	-
Other or none.....	993	187	287	252	171	65	30
<u>Race and ethnicity</u>							
White.....	21,525	2,668	5,184	4,532	4,438	3,560	1,143
Black.....	2,680	263	623	513	499	443	341
Hispanic origin <sup>1</sup> .....	1,795	235	467	375	328	316	75
<u>Farm background</u>							
Farm.....	6,396	564	1,177	1,264	1,444	1,300	648
Nonfarm.....	18,058	2,410	4,699	3,839	3,544	2,731	835
<u>Geographic region</u>							
Northeast.....	5,083	540	1,307	1,108	1,071	850	208
North Central.....	6,461	824	1,444	1,401	1,392	1,050	349
South.....	7,967	1,084	1,901	1,608	1,479	1,279	617
West.....	4,942	525	1,224	986	1,046	851	310
<u>Education</u>							
Elementary school, 8 years or less.....	2,355	207	410	354	471	540	374
High school, 9-11 years.....	5,243	482	1,073	1,101	1,061	933	593
High school, 12 years.....	11,655	1,517	2,959	2,534	2,426	1,815	403
College, 13-15 years.....	3,099	407	839	682	573	513	86
College, 16 years or more.....	2,101	361	595	431	457	229	28
<u>Occupation</u>							
Never worked.....	1,166	181	291	241	210	164	79
Professionals and managers.....	3,670	482	857	777	809	581	164
Sales and clerical workers.....	9,835	1,301	2,434	2,153	1,995	1,596	357
Service workers.....	4,965	539	1,235	922	967	877	425
Craftworkers, operatives, and farmworkers.....	4,816	470	1,059	1,010	1,007	812	458
<u>Poverty level</u>							
Below poverty income.....	2,647	312	602	534	499	465	235
100-199 percent.....	5,578	749	1,354	1,143	1,205	755	373
200-299 percent.....	6,308	814	1,726	1,350	1,261	894	262
300 percent or more.....	9,920	1,098	2,193	2,075	2,023	1,917	614
<u>Employment between first and second birth</u>							
No next birth.....	5,711	2,566	1,850	631	374	208	82
Employed between births.....	7,007	125	1,762	1,857	1,575	1,160	528
Not employed between births.....	11,736	283	2,263	2,614	3,039	2,663	873

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 11. Number of ever-married women 15-44 years of age with 2 births or more, by birth cohort of mother and selected characteristics: United States, 1973

Selected characteristic	Birth cohort of mother						
	Total	1951-59	1946-50	1941-45	1936-40	1931-35	1929-30
	Number in thousands						
All women .....	18,891	696	3,033	4,409	4,471	4,583	1,699
<u>Religion</u>							
Catholic .....	5,583	155	930	1,348	1,319	1,360	470
Protestant .....	12,304	476	1,919	2,821	2,930	2,985	1,172
Jewish .....	328	-	21	63	101	107	36
Other or none .....	676	65	163	177	121	130	20
<u>Race and ethnicity</u>							
White .....	16,700	546	2,640	3,941	3,974	4,063	1,534
Black .....	2,014	140	369	446	437	458	165
Hispanic origin <sup>1</sup> .....	1,427	69	307	300	367	328	57
<u>Farm background</u>							
Farm .....	5,162	134	654	1,037	1,321	1,500	516
Nonfarm .....	13,729	563	2,378	3,372	3,150	3,083	1,183
<u>Geographic region</u>							
Northeast .....	4,029	104	568	975	942	1,021	420
North Central .....	5,090	173	771	1,213	1,218	1,231	483
South .....	5,845	263	1,021	1,297	1,369	1,436	459
West .....	3,927	156	673	925	941	895	336
<u>Education</u>							
Elementary school, 8 years or less .....	1,991	99	271	332	473	606	210
High school, 9-11 years .....	4,347	359	773	904	980	991	340
High school, 12 years .....	8,741	216	1,537	2,104	2,133	2,003	748
College, 13-15 years .....	2,350	21	369	667	491	571	231
College, 16 years or more .....	1,462		83	402	395	413	169
<u>Occupation</u>							
Never worked .....	901	95	195	234	155	187	35
Professionals and managers .....	2,740	31	220	649	674	843	322
Sales and clerical workers .....	7,457	184	1,174	1,842	1,845	1,717	695
Service workers .....	3,923	210	726	859	952	844	332
Craftworkers, operatives, and farmworkers .....	3,870	176	718	826	845	992	315
<u>Poverty level</u>							
Below poverty income .....	2,177	162	426	463	531	495	100
100-199 percent .....	4,544	345	869	1,038	1,046	912	335
200-299 percent .....	4,964	128	1,012	1,287	1,186	1,062	289
300 percent or more .....	7,206	61	726	1,622	1,708	2,115	975
<u>Employment between first and second birth</u>							
No next birth .....	7,936	580	2,014	2,124	1,429	1,264	525
Employed between births .....	3,621	40	388	852	1,050	1,004	286
Not employed between births .....	7,333	76	630	1,433	1,992	2,315	887

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

Table 12. Number of ever-married women 15-44 years of age with 2 births or more, by year of second birth and selected characteristics: United States, 1973

Selected characteristic	Year of second birth						1950 or before
	Total	1971-74	1966-70	1961-65	1956-60	1951-55	
Number in thousands							
All women.....	18,891	2,573	4,352	4,478	4,549	2,460	479
<u>Religion</u>							
Catholic.....	5,583	844	1,292	1,362	1,358	643	84
Protestant.....	12,304	1,547	2,800	2,838	2,985	1,741	393
Jewish.....	328	33	63	104	92	36	
Other or none.....	676	149	196	174	113	40	2
<u>Race and ethnicity</u>							
White.....	16,700	2,316	3,841	3,970	4,068	2,164	340
Black.....	2,014	224	449	450	463	290	139
Hispanic origin <sup>1</sup> .....	1,427	230	335	352	286	194	29
<u>Farm background</u>							
Farm.....	5,162	495	1,051	1,168	1,391	816	242
Nonfarm.....	13,729	2,078	3,301	3,310	3,158	1,644	237
<u>Geographic region</u>							
Northeast.....	4,029	600	955	978	989	445	63
North Central.....	5,090	646	1,162	1,259	1,252	657	115
South.....	5,845	800	1,322	1,332	1,451	744	195
West.....	3,927	527	912	910	856	615	106
<u>Education</u>							
Elementary school, 8 years or less.....	1,991	166	361	422	472	398	172
High school, 9-11 years.....	4,347	519	873	1,034	1,007	737	177
High school, 12 years.....	8,741	1,268	2,090	2,186	2,109	965	122
College, 13-15 years.....	2,350	347	615	525	602	259	3
College, 16 years or more.....	1,462	274	413	311	359	100	5
<u>Occupation</u>							
Never worked.....	901	150	209	219	179	110	34
Professionals and managers.....	2,740	371	604	641	736	369	18
Sales and clerical workers.....	7,457	1,120	1,775	1,771	1,785	892	114
Service workers.....	3,923	463	933	873	943	543	17
Craftworkers, operatives, and farmworkers.....	3,870	469	831	974	906	545	146
<u>Poverty level</u>							
Below poverty income.....	2,177	231	549	517	525	257	99
100-199 percent.....	4,544	767	942	1,126	1,027	535	147
200-299 percent.....	4,964	819	1,307	1,123	1,148	473	95
300 percent or more.....	7,206	757	1,554	1,712	1,849	1,195	139
<u>Employment between first and second birth</u>							
No next birth.....	7,936	2,398	2,554	1,472	1,071	401	40
Employed between births.....	3,621	43	593	1,091	1,117	623	153
Not employed between births.....	7,333	132	1,204	1,915	2,360	1,436	286

<sup>1</sup>The Hispanic origin classification was made independently of racial classification and includes women from all racial groups.

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## APPENDIX I

### TECHNICAL NOTES

#### Background

This report is one of a series of statistical reports based on information collected from a nationwide sample of women by the National Survey of Family Growth conducted by the National Center for Health Statistics.

The National Survey of Family Growth (NSFG) utilizes a questionnaire to obtain demographic information and information on fertility, family planning, and health factors related to childbearing. As data relating to various subjects within these broad topics are tabulated and analyzed, separate reports are issued. The present report is based on data collected in the first cycle of the survey, which was centered on September 1973.

The population covered by the sample for the NSFG is women 15-44 years of age living in households in the conterminous United States at the time of interview who were ever married or had offspring living with them. The sample did not include women living in institutions or group quarters. Personal interviews were conducted by the staff of the National Opinion Research Center (NORC), Chicago, beginning in July 1973 and ending in February 1974.

#### Statistical Design

The sampling plan for the survey was a multistage probability design. Black households and households of all other races were selected at different probabilities so that the sample was composed of about 40 percent black women and 60 percent women of all other races. The sample was designed so that tabulations could be provided for each of the four geographic regions of the United States.

The first stage of the sample design consisted of drawing a sample of primary sampling units (PSU's). A PSU consisted of a county, a small group of contiguous counties, or a standard metropolitan statistical area as defined by the U.S. Bureau of the Census in March 1971. The second and third stages of sampling were used to select several segments (clusters of about 100 dwelling units) within each PSU. A systematic sample of dwelling units was then selected from each segment. Each sample dwelling unit was visited by an interviewer who listed all household members. If a woman 15-44 years of age, ever married or with offspring in the household, was listed as being in the household, an extended interview was conducted. If more than one woman in the household met the eligibility criteria, one of the women was randomly selected for an extended interview.

Since the design of the NSFG was a complex multistage probability sample, the derivation of estimates involved three basic operations:

*Inflation by the reciprocal of the probability of selection.*—The probability of selection is the product of the probabilities of selection from each step of selection in the design (PSU, segment, listing unit, household, and sample persons within household).

*Nonresponse adjustment.*—The estimates were inflated by a multiplication of two factors. The first has the number of sample households in a given PSU and stratum as its numerator and the number of households screened in the PSU and stratum as its denominator. The second factor has as its numerator the number of screened households with an eligible woman of a specific

age and race class and PSU group, and as its denominator, the number of women actually interviewed in the same age and race class and PSU. Screener response for the total survey was 89.8 percent and interview response was 90.2 percent for the total sample, yielding an overall response of approximately 81.0 percent.

*Poststratification by marital status-age-race.*—The estimates are ratio adjusted within each of 12 age-race cells to an independent estimate of the population for ever-married women. These independent estimates were derived from the U.S. Bureau of the Census Current Population Surveys of 1971-73. The numbers of single women with offspring living with them were inflated by steps 1 and 2.

All figures are individually rounded; aggregate figures are rounded to the nearest thousand. The sums of aggregates and percentages may not add up to the total due to the rounding.

The effect of the ratio-estimating process is to make the sample more closely representative of the population of women 15-44 years of age, living in households in the conterminous United States, and ever-married or with offspring living with them. The final poststratification reduces the sample variance of the estimates for most statistics.

Descriptive material on the sampling design and estimation procedures may be found in another report.<sup>14</sup>

### **Measurement Process**

Field operations for the survey were conducted by NORC as agent for NCHS. Their responsibilities included pretesting the interview schedule, selecting the sample, interviewing respondents, and carrying out quality control checks. The questionnaire was pretested in November 1972, and subsequent smaller field trials were held in March 1973. Interviewers were trained for a week prior to fieldwork and had their first few schedules reviewed thoroughly. During the first part of the fieldwork, each interview schedule was reviewed for the completeness of certain key items and more in-

tensive review and followup were performed if errors were discovered. Review and followup were reduced to a sample of each interviewer's work in the later part of the fieldwork. A 10-percent sample of all households with telephones was recontacted to verify the interview and the accuracy of a few items. All of these operations were monitored by NCHS.

The parts of the interview schedule applicable to this report are reproduced in appendix III. The complete schedules are available upon request. Two different forms were used, one for interviewing currently married women and the other for interviewing widowed, divorced, separated, or single women with their own children living with them. The two forms differ mainly in wording when reference is made to the husband; there are a few questions in each schedule that do not appear in the other.

### **Data Reduction**

Coding and keying were done by NORC and the U.S. Bureau of the Census. Each coder's work was systematically sampled for verification. Keying at the U.S. Bureau of the Census was performed on key-to-disk equipment programmed to reject invalid entries. Each keyer's work was systematically sampled for verification. The data were edited by the U.S. Bureau of the Census and NCHS to minimize internal inconsistencies. After editing, value entries were imputed to cases with missing data on an item-by-item basis. No item with more than 15 percent missing data was included in the imputation. The imputed value entry for a case was selected from a randomly chosen case with similar characteristics such as race, age, and marital status, using a procedure known as "hot deck" imputation.

### **Reliability of Estimates**

Since the statistics presented in this report are based on a sample, they may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same questionnaires, instructions, interviewing personnel, and field procedures. This chance difference between sample results and a complete count is referred to as sampling error

and is measured by a statistic called the standard error of estimate. The relative standard error of an estimate is obtained by dividing the standard error of the estimate by the estimate itself and is expressed as a percentage of the estimate. Included in this appendix are charts and tables from which the relative standard errors can be determined for estimates shown in this report. In order to derive relative errors which would be applicable to a wide variety of health statistics and which could be prepared at a moderate cost, a number of approximations were required. As a result, the charts provide an estimate of the approximate relative standard error rather than the precise error for any specific statistic. The standard errors were computed using a procedure known as balanced half-sample replication.<sup>15</sup>

The chances are about 68 out of 100 that an estimate from the sample would differ from a complete census by less than the standard error. The chances are about 95 out of 100 that the difference between the sample estimate and a complete count would be less than twice the standard error. In this report, numbers and percentages which have a standard error that is more than 25 percent of the estimate itself are considered "unreliable." They are marked with an asterisk to caution the user but may be combined to make other types of comparisons of greater precision.

In this report, sample statistics are compared among subgroups or across years, using the normal deviate test at the 0.05 level of confidence. A statistically significant difference among comparable proportions of other statistics from two or more subgroups is one sufficiently greater than zero that a difference of that size or larger would be expected in less than 5 percent of repeated samples of the same size and type if there were no true difference in the populations sampled. If the observed difference or a larger one could be expected in more than 5 percent of repeated samples, one cannot be sufficiently confident to conclude that there is a true difference in the populations. When an observed difference is sufficiently greater than zero to be statistically significant, the true difference in the population is estimated to lie between the observed difference plus or minus 2 standard

errors of that difference in 95 out of 100 samples.

When two or more sample statistics are compared and they have only small, statistically non-significant differences among them, they may be referred to as the "same" or "similar." However, where a substantial difference observed is found not to be statistically significant, one should not conclude that no difference exists, but simply that such a difference cannot be established with 95-percent confidence from this sample. Observed differences that are described in terms such as "greater," "less," "larger," "smaller," etc., have been tested and found statistically significant. Lack of comment in the text about any two statistics does not mean the difference was tested and found not to be significant.

The standard error of a difference between two comparative statistics, say the proportion with characteristic M among black women compared with white women, is approximately the square root of the sum of the squares of the standard errors of the statistics considered separately, or calculated by the formula,

$$d = P_1 - P_2$$

is

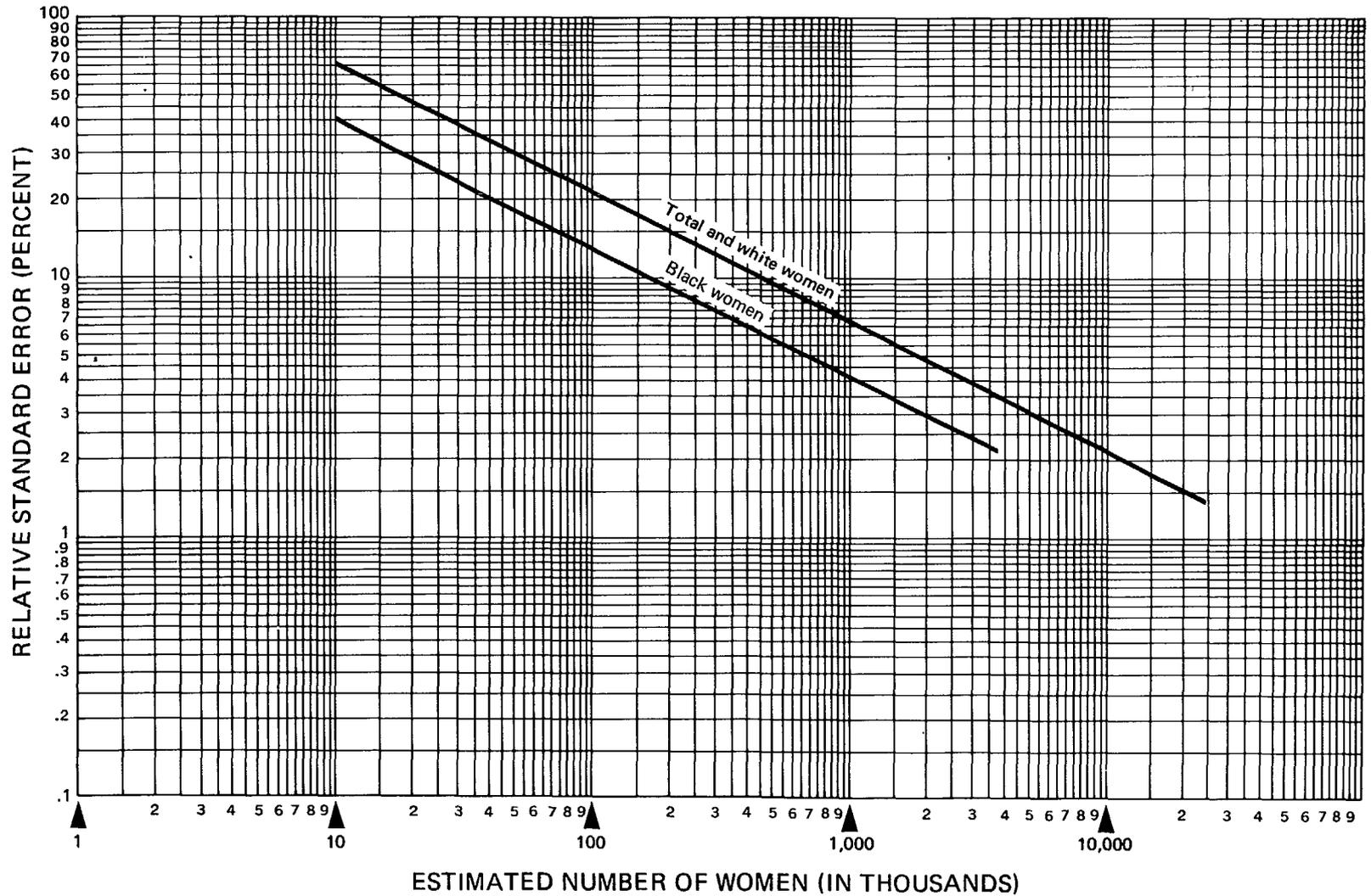
$$\sigma_d = \sqrt{P_1^2 V_{P_1}^2 + P_2^2 V_{P_2}^2}$$

where  $P_1$  is the proportion for one group, and  $P_2$  the proportion for the comparative group, and  $V_{P_1}$  and  $V_{P_2}$  are the relative standard errors of  $P_1$  and  $P_2$ , respectively. This formula will represent the actual standard error quite accurately for the difference between separate and uncorrelated characteristics, although it is only a rough approximation in most other cases. The relative standard error of various proportions can be estimated from figures I and II and tables I and II for statistics based on the National Survey of Family Growth.

### Nonsampling Error

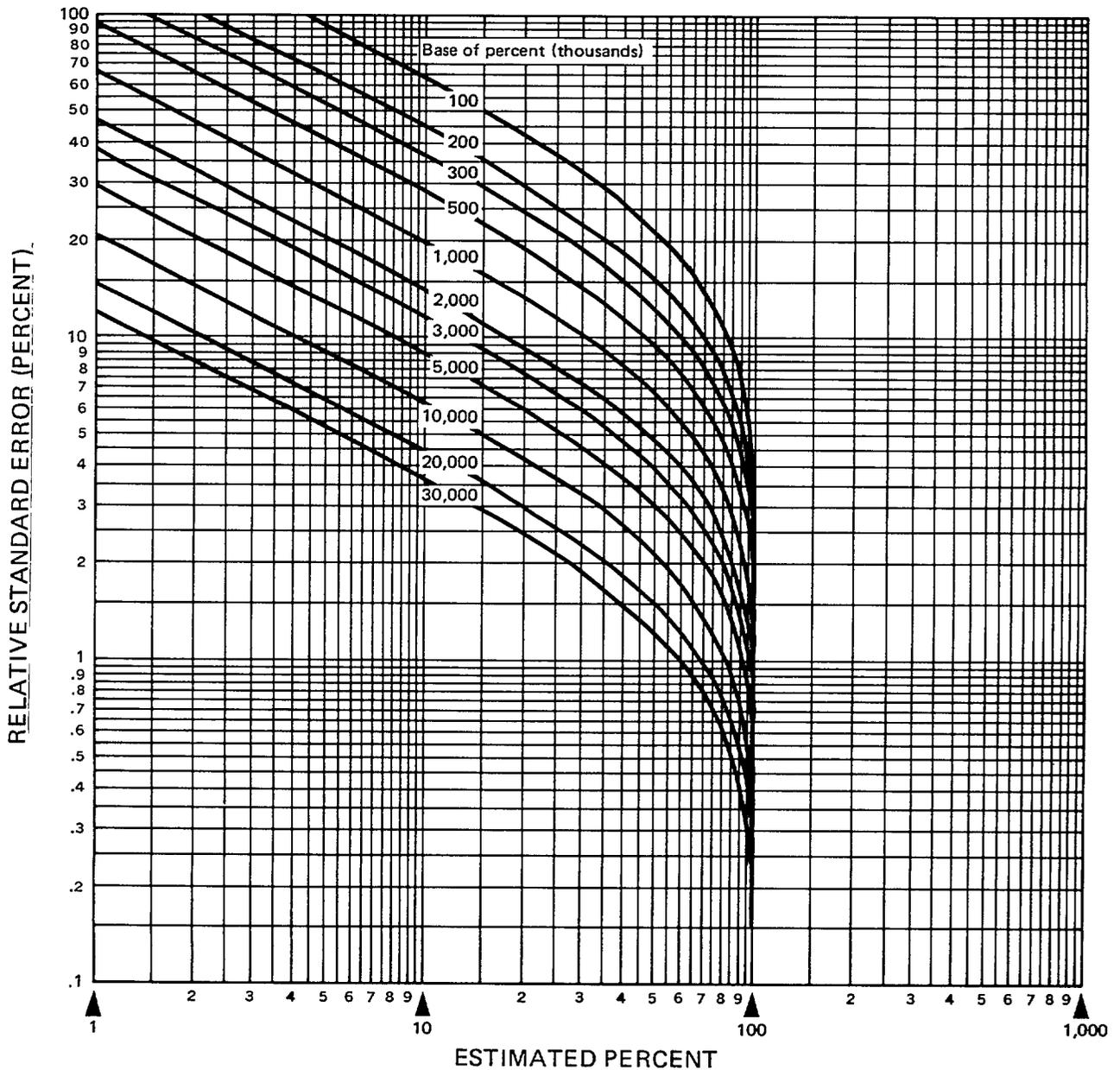
In addition to sampling error, the survey results are subject to several sources of potential nonsampling error, including interview nonresponse, nonresponse to individual questions within the interview, inconsistency of responses

Figure 1. Relative standard errors for aggregates of women, by race



*Example of use of chart:* An aggregate of 2 million women (on the scale at the bottom of the chart) of all races has a relative standard error of 4.8 percent, or a standard error of 96,000 (4.8 percent of 2 million).

Figure 11. Relative standard errors for percent of total and white women (base of percent shown in curve in thousands)



*Example of use of chart.* An estimate of 10 percent (from the scale at the bottom of the chart) of a population subgroup of 1 million women (fifth curve from the top) has a relative standard error of 20.0 percent, or a standard error of 2.0 percent (20.0 percent of 10 percent).

to individual questions, respondent error or misreporting, and errors of recording, coding, or keying by survey personnel. It is impossible to measure the extent of nonsampling errors accurately. Although some useful approximate meas-

ures can be made of some types of nonsampling error, the survey must rely upon several quality control procedures and other methods incorporated into the survey design to minimize nonsampling error.

Table I. Approximate standard errors for estimated percents expressed in percentage points for white and total women: 1973 National Survey of Family Growth

Base of percentage	Estimated percent						
	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
100,000.....	3.0	4.6	6.4	8.5	9.7	10.4	10.6
500,000.....	1.3	2.1	2.8	3.8	4.3	4.6	4.7
1,000,000.....	0.9	1.5	2.0	2.7	3.1	3.3	3.3
3,000,000.....	0.5	0.8	1.2	1.5	1.8	1.9	1.9
5,000,000.....	0.4	0.6	0.9	1.2	1.4	1.5	1.5
7,000,000.....	0.3	0.5	0.8	1.0	1.2	1.2	1.3
10,000,000.....	0.3	0.5	0.6	0.8	1.0	1.0	1.1

Table II. Approximate standard errors for estimated percents expressed in percentage points for black women: 1973 National Survey of Family Growth

Base of percentage	Estimated percent						
	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
5,000.....	7.9	12.3	17.0	22.6	25.9	27.7	28.3
10,000.....	5.6	8.7	12.0	16.0	18.3	19.6	20.0
50,000.....	2.5	3.9	5.4	7.1	8.2	8.8	8.9
100,000.....	1.8	2.7	3.8	5.1	5.8	6.2	6.3
300,000.....	1.0	1.6	2.2	2.9	3.3	3.6	3.6
500,000.....	0.8	1.2	1.7	2.3	2.6	2.8	2.8
700,000.....	0.7	1.0	1.4	1.9	2.2	2.3	2.4
1,000,000.....	0.6	0.9	1.2	1.6	1.8	2.0	2.0

*Interview Nonresponse.*—Interview nonresponse, or the failure to obtain whole interviews, arises from several sources—incomplete listing of households for the sampling frame, inability to screen all sample households for eligible respondents, and inability to complete a full interview. Completeness of listing cannot be tested directly as it requires an independent, accurate accounting of the households that should have been listed. In the NSFG, listing accuracy was tested at the time of screening by use of the “half open interval” check for missed households; i.e., at designated sample households, the interviewer was required to check for dwelling units between the sample household just screened and the next listed dwelling unit. This procedure resulted in the addition of 781 missed units or an additional 2.4 percent to the original sample of dwelling units to be screened.

Of the original sample of 32,818 dwelling units to be screened, 3,820 were found to be vacant, not dwelling units, or group quarters. Of the remaining dwelling units, 9.7 percent were

not successfully screened. This included 2.3 percent refusals to have the household members listed; 1.6 percent with language problems, illness, or otherwise unavailable in the field period; 4.6 percent where no one could be found at home; and 1.1 percent for other reasons such as refused access to the unit.

Of the 26,177 households for which screening was completed, 10,879 were found to contain an eligible respondent. However, interviews were not completed in 9.8 percent of these cases because of refusals by the eligible respondents (5.0 percent); language, illness, and related problems (2.0 percent); and no contact after repeated calls (2.7 percent).

The nonresponse adjustment for interview nonresponse described above imputes to nonresponding dwelling units and women the characteristics of similar respondent dwelling units and women.

*Item nonresponse.*—Nonresponse to individual questions (item nonresponse) was less than 2 percent for about half (51 percent) of the

items. Item nonresponse occurred when the person refused to answer the question, when the person did not know the answer to the question, when the question was erroneously not asked or the answer not recorded by the interviewer, and where the answer was uncodeable. For 37 percent of the items, nonresponse was between 2.0 and 10.0 percent. For the remaining 12 percent of the items, nonresponse was greater than 10 percent of persons eligible to answer the items. Half of these high nonresponse items were concentrated in two areas—detailed income questions and questions about the reasons for switching from one contraceptive method to another. The remaining high nonresponse items were generally those asked of small numbers of persons.

The amount of missing data or imputed values for various items will usually be shown with the definition in appendix II, especially where it is substantial. Some illustrative items with their associated nonresponse rates are: the number of children ever born (parity) (no missing data), intentions about having another child (0.7 percent), whether contraception was stopped in order to become pregnant (1.9 percent), highest grade of school attended (0.1 percent), and total family income (6.8 percent).

For most items an adjustment for missing data values was made by one of four imputation procedures. In order of frequency employed they were: (1) "hot deck" imputation, (2) imputation from a sorted file, (3) editing from other data within the same case, and (4) allocation based on technical judgments.

"Hot deck" imputation refers to a procedure in which the file is first randomized. Next a matrix is created for values of items (e.g., race, age, and marital status) judged to be correlated with the item to be imputed (e.g., number of times married). A reasonable "cold deck" value (e.g., 2 = married twice) is assigned to each cell of the matrix in case the first file record with the given characteristics has missing data. The randomized file is processed and each record is identified as belonging to one cell of the matrix (e.g., white, age 25-29, currently married). The item to be imputed is checked: if it is blank—not applicable (e.g., not married before), it is ignored; if it has a missing data code, the code in the matrix is placed in the record. If it has an acceptable code, that code replaces the code

already in the matrix, and it remains in the matrix until another record with the same characteristics and a known code is encountered. This insures that the probability of a code being assigned to a record with missing data is the same as the probability of that code occurring among records with the same characteristics but with known data.

For imputation from a sorted file, the records are first sorted by selected characteristics (e.g., marital status, race, and age) so that the first group of records would be currently married black women aged 15-19, the second group would be currently married black women aged 20-24, etc. An initial value is assigned for the item to be imputed—(e.g., 4 [tubal ligation] for type of sterility)—and for any item dependent upon the item to be imputed—(e.g., 9 [not ascertained] as to whether the operation was for contraceptive reasons). The ordered file is processed and each record is checked. If the item to be imputed is blank—not applicable, it is ignored; if it has a known code, it and its dependent items would replace the existing set of values; if it has a missing data code, it and its dependent items would be changed to the preset values above. This procedure insures that the imputed code is reasonable for the ordering characteristics and that the probability of assignment is the same as in the population in general. There will be some bias, however, as the boundaries between groups are crossed.

Where sampling error affects the precision of survey estimates, nonsampling error introduces bias. Imputation procedures reduce this bias to the extent that the assumptions about the relations between respondent and nonrespondent characteristics are true. But the amount of remaining bias, if any, cannot be measured. Therefore, stringent quality control procedures were introduced at every stage of the survey, including the check on completeness of the household listing mentioned earlier, the extensive training and practice of interviewers, field observation of interviewers, field editing of questionnaires, short verification interviews with a subsample of respondents and missed households, verification of coding and editing, an independent recode of a sample of questionnaires by NCHS, keypunch verification, and an extensive computer "cleaning" to check for

impermissible codes, missing data, and response inconsistencies. One source of bias that can be evaluated through special studies but cannot be controlled is respondent error, whether deliberate or unwitting. In this as in other surveys, the data are subject to problems of accurate recall and of the stability of respondents' views from one time to the next.

*Age-at-marriage bias.*—It should be noted that among birth cohorts only those members who have been married or have children living with them are included in these samples. Since most American women are married before age 25, the women interviewed at ages over 25 are quite representative samples of all women in their cohorts. But women interviewed under age 25, and especially under age 20, are not representative of all women in their cohorts because the survey does not include the numerous women in their cohorts who had not yet married at the time of interview. In other words, the samples of women in recent cohorts, the young women, include only early-marrying women, while the samples of women in earlier cohorts, the older women, include both early- and late-marrying women. In comparing recent and earlier cohorts, therefore, groups are being compared which have different age-at-marriage compositions. To the extent that age at marriage is associated with breast feeding practice, comparisons between cohorts are affected by differences in age-at-marriage composition in addition to any effects of historical trends in breast feeding practice. This kind of problem is inherent in a survey such as the National Survey of Family Growth, which reconstructs past events

from reports of a sample of women interviewed at one point in time. It cannot be solved completely and should be kept in mind by the reader as a caution to the interpretation of comparisons between cohorts.

## THE 1965 NATIONAL FERTILITY STUDY

In this report, NSFG data are sometimes compared to data from the 1965 National Fertility Study (NFS).

### Background

Like the 1973 NSFG, the 1965 NFS collected information on fertility and family planning. The target population consisted of currently married women born since July 1, 1910, who were living with their husbands and residing in the conterminous United States. The survey was conducted by the Office of Population Research at Princeton University and sponsored by the National Institute of Child Health and Human Development. National Analysts, Inc., of Philadelphia drew the area probability sample, conducted the interviews, edited and coded the questionnaires, and prepared the basic data file.

The interview completion rate in the study, defined as the number of successfully completed interviews divided by the estimated number of women eligible to be interviewed, was 88 percent. Of the 12 percent not interviewed, some two-thirds, or 8 percent, were classified as "refusals;" the remainder were cases of the

Table III. Standard errors for estimated percents for currently married white women and currently married women of all races based on data from the 1965 National Fertility Study

Number of women in thousands	Estimated percent					
	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
500 .....	2.4	3.4	5.0	5.1	5.4	5.5
1,000 .....	1.7	2.8	3.2	3.7	4.0	4.0
2,000 .....	1.2	1.7	2.4	2.7	2.8	2.9
5,000 .....	0.9	1.2	1.6	1.8	2.0	2.0
10,000 .....	0.7	0.9	1.3	1.5	1.5	1.6
20,000 .....	0.6	0.8	1.1	1.2	1.3	1.3

respondent not at home despite calls and other miscellaneous reasons. Interviews were completed with 5,617 women. Further discussion of the design and conduct of the survey is found in the study report by Ryder and Westoff.<sup>15</sup>

### Standard Errors

Standard errors for the 1965 National Fertility Study are measures of sampling variability, the variation that occurs by chance because a sample of units is surveyed rather than the entire population. The chances are about 68 out of 100 that an estimate from the sample would differ from the population value by less than 1 standard error, about 95 out of 100 that the difference would be less than twice the standard error, and about 99 out of 100 that the difference would be less than 2½ times the standard error.

The contractor for the 1965 survey produced tables of approximate standard errors for percentage estimates from which table III in this appendix was derived.

### DIFFERENCES BETWEEN NSFG AND NFS ESTIMATES

It will be noted that the NFS and NSFG data for the same birth cohorts and years of birth yield somewhat different estimates of the proportions breast feeding. Several factors may contribute to these differences. First, the data are from probability samples, and two probability samples drawn independently from the same population will produce different estimates of the same statistics, within theoretically known limits. Most of the differences between estimates

of the same statistics from these two surveys are so small that it is likely that they resulted from chance sampling factors.

Second, there were small differences in the questions on breast feeding asked in the two surveys. The 1965 NFS simply asked women if they had breast fed the baby, while the 1973 NSFG asked if they had breast fed the baby "at all." It is possible that women with identical breast feeding experience would answer those two questions differently. Also, in 1965 the question about breast feeding was asked about all babies, but in 1973 it was asked only about babies who lived with the mother for 2 months; thus, breast feeding of babies who died or were separated from their mothers within 2 months was included in the 1965 survey but not in the 1973 survey.

Finally, the 8-year interval between the surveys affects estimates for the same birth cohorts and years of birth. The 1965 sample of a birth cohort represents women who were mothers at that time. By 1973, more women from the same cohort had become mothers, making them eligible for the sample. Thus, the 1973 sample from a birth cohort represents more mothers than the 1965 sample from the same cohort; the larger 1973 sample might also be somewhat different, on the average, from the 1965 sample. Comparisons between the two surveys for the same years of babies' births are affected in a related way. Some of the women who reported in 1965 on breast feeding of babies born in a particular period would have become too old (45 years of age) to be included in the 1973 survey. Thus, the 1973 sample of women reporting on babies born in that period would be somewhat smaller and possibly somewhat different, on the average, than the 1965 sample reporting on the same birth period.



## APPENDIX II

### DEFINITION OF TERMS IN THE NATIONAL SURVEY OF FAMILY GROWTH

*Breast feeding.*—For each of her children who lived with her for at least 2 months after birth, mothers were asked, “When (CHILD) was an infant, did you breast feed him/her at all?” If so, women were then asked, “How many weeks old was he/she when you quit breast feeding him/her altogether?” Women who answered the first question affirmatively were considered to have breast fed the child regardless of the length of time reported in the following question. Reporting on breast feeding was very complete; for instance, breast feeding status of the first child was ascertained for more than 99 percent of respondents.

*Birth cohort.*—A birth cohort is a group of women born in a specified calendar period. Because the information for classifying women in birth cohorts comes from a sample of women who were married, previously married, or single with children of their own living in the household, it may be a biased sample of all women born in a specific period. Women who were born in a specific period but who were never married and without children at the time of the interview would not be represented in the birth cohorts constructed from these data. This bias is negligible for early birth cohorts (older women), because very few of them had not married by the time of interview; but the bias is significant for recent birth cohorts, because many of them have not yet married or borne children and are not represented in the sample. The effect of their omission is a relative overrepresentation of early-marrying women in the recent birth cohorts constructed from the sample data.

*Marital status.*—Marital status was a criterion of sample selection. The NSFG sampled women who were currently married at the time of interview, had ever been married, or had never been

married but had offspring (i.e., children born to them) in the household. Current marital status was recorded in seven categories in response to the question, “Is (PERSON) now married, widowed, divorced or annulled, separated, or has he/she never been married?” The seven categories in which answers were recorded were married, informal union, widowed, divorced or annulled, separated, single with own children, and never married. Women in the last category were not eligible for the survey.

Married women include those who are legally or formally married whose husbands are living in the household or are temporarily absent on business, illness, vacation, etc., and those who are informally married or “living together” with a male partner whose usual residence is the same household. Women currently in informal unions were reported separately but are too few to be separately classified for analytical purposes. Information on informal unions was obtained only if volunteered by the respondent in the course of listing household members and their relationship to the head of the household.

Divorced women include those legally separated from their former spouses by a legal decree of divorce or annulment and free to remarry. While those legally separated but without freedom to remarry belong in the later category of separated, there was no direct question in the interview to establish the issue of freedom to remarry with certainty. The term divorce is presumed to refer most generally to “absolute” decrees.

Widowed women are those previously married women whose most recent spouses are deceased.

Separated women are those legally or informally separated from their former spouses.

Included here would be cases of desertion, informal separation by mutual agreement, and legal separations in which the partners are not free to remarry.

Single with own children is a category of women who have begun their childbearing and have never been married. However, some of these women were probably missed in the survey because this category was not identified by a direct question. These are single women who have one or more children born to them and living with them in the household. Single women who gave a child up for adoption or who board the child elsewhere and those who have not had a live birth are not included in the survey.

*Religion.*—Women were classified by religion in response to the question, “Are you Protestant, Roman Catholic, Jewish, or something else?” In addition to the three major religious groupings, two other categories—other and none—were used. Since the category of Protestant includes numerous individual denominations, these respondents were further asked to identify the denomination to which they belonged. Those who answered “other” to the original question and then named a Protestant denomination were then included with their own groups. Although specific denominational names were obtained and recorded, the numbers of cases for most denominations were too few to produce reliable estimates, so they have been combined in larger categories. Data on religious denominations were reported for all but 26 respondent cases, more than 99 percent, and these few cases were imputed.

*Race and ethnicity.*—Women were classified as white, black, or “other races” according to the interviewer’s observations at the time of interview. Agreement between this classification and the respondent’s own reports of ethnic origin, also obtained in the interview, was very high; for instance, of those classified as “black” by interviewer observation, 100 percent reported their ethnic origin as at least partly “black, African, or Negro”; and of those who reported their ethnic origin as “black, African, or Negro,” 96 percent were classified as “black” by interviewer observation. Race was imputed for 10 cases.

Information about ethnic origins was obtained for the woman by asking, “What is your

origin or descent?” Persons were classified as being of Hispanic origin if any of the following responses were given: Mexicano, Chicano, Mexican American, Puerto Rican, Cuban, Hispano, or any other Spanish origin or descent. Persons who did not give any of those responses were classified as being not of Hispanic origin. Persons may have more than one origin or descent, and multiple responses to the questions were recorded. However, any of the responses listed above resulted in classification of the person as being of Hispanic origin regardless of any other responses which may have accompanied it. It should be noted that in this report the classifications of race and ethnicity are independent; each ethnic category may include persons of all races, and each racial category may include persons of all ethnic groups. Ethnicity was reported for more than 99 percent of respondents.

*Farm background.*—Women were asked, “When you were growing up, that is, between the ages of 6 and 16, did you live on a farm most of the time (half of the time or more)?” Women who answered affirmatively were classified as having a farm background, and others were classified as having a nonfarm background. Responses were obtained from more than 99 percent of sample women. Note that the term “farm” was not defined for respondents, so there may be considerable variation in the childhood experience of those who reported a farm background.

*Education.*—Education is classified according to the highest grade or year of regular school or college that was completed. Determination of the highest year of regular school or college completed by the respondent is based on responses to a series of questions concerning (a) the last grade or year of school attended, (b) whether or not that grade was completed, (c) whether any other schooling of a vocational or generally nonacademic type was obtained, and (d) whether or not such other schooling was included in the years of regular school or college reported in (a). Information on education was reported almost completely. Only about 1 percent of the data was imputed.

*Occupation.*—Occupation was determined by asking women: “What (is/was) your (main) occupation? That is, what (is/was) your job called? What (are/were) your most important activities

or duties? What kind of place (do/did) you work for? What do they make or do?" The answers to those questions were recorded verbatim and used by coders to find the most appropriate standard job title in the 1970 U.S. Census occupation classification. If the responses indicated more than one occupation, the primary occupation was coded. If none was primary, the first mentioned occupation was coded. Although the classification used was very detailed, occupations have been grouped into major categories for this report according to the practice of the U.S. Bureau of the Census. For a more detailed discussion, see the Department of Commerce publication, "1970 Census of Population, Detailed Characteristics, U.S. Summary," PC (1) D1, pp. A17-A18.

*Poverty level.*—The Federal Government periodically estimates the amount of income needed by male- and female-headed families of different sizes to purchase essential goods and services, the "poverty threshold." (See U.S. Bureau of the Census, *Current Population Reports*, Series P-60, No. 98, "Characteristics of the Low Income Population," Table A-3.) Poverty level income for a family is the ratio of its total family income to the official poverty threshold for a family of its size and sex of head, expressed as a percentage of the poverty threshold.

*Geographic region.*—Data are classified by region of residence into the four major Census regions: Northeast, North Central, South, and West. Sample size varies greatly and restricts the possibility of meaningful analyses by social characteristics among smaller geographic divisions. The States comprising these four major geographic regions are:

#### Northeast

Maine  
New Hampshire  
Vermont  
Massachusetts  
Rhode Island

#### North Central

Ohio  
Indiana  
Illinois  
Michigan  
Wisconsin

#### Northeast—Con.

Connecticut  
New York  
New Jersey  
Pennsylvania

#### North Central—Con.

Minnesota  
Iowa  
Missouri  
North Dakota  
South Dakota  
Nebraska  
Kansas

#### South

Delaware  
Maryland  
District of Columbia  
Virginia  
West Virginia  
North Carolina  
South Carolina  
Georgia  
Florida  
Kentucky  
Tennessee  
Alabama  
Mississippi  
Arkansas  
Louisiana  
Oklahoma  
Texas

#### West

Montana  
Idaho  
Wyoming  
Colorado  
New Mexico  
Arizona  
Utah  
Nevada  
Washington  
Oregon  
California  
Alaska  
Hawaii

*Employment.*—In addition to their current employment status, respondents were asked: "...Did you ever work for pay?" in various, specified earlier periods as appropriate. The periods were: before first marriage, since first marriage, between marriage and first birth, between first and second birth, between second and third birth, and between the third and last birth. Within these periods women were classified as employed if they worked for pay and not employed if they did not. The rate of nonresponse to these questions was low, its maximum being for questions about employment between the births of the third and the last child. Employment status was not ascertained for 3 percent of women asked about the period, and duration of employment was not ascertained for 9 percent. Missing values were imputed.



APPENDIX III

ITEMS ON NSFG QUESTIONNAIRE RELATED TO BREAST FEEDING

SECTION II

In a study of family growth in this country, one of the most important things is knowing some basic facts about pregnancies and births that women have.

18. Have you had a baby born to you at any time? Yes . . . (ASK A) . . . . 1 10  
 No . (SKIP TO Q. 21) . . . 2

A. IF YES: Altogether, how many babies have you had born to you, including any who died very young? (Number of live births)   Recall Chart

19. Now I'd like to get some information about (each of) your (baby/babies).

(ASK A-F FOR EACH LIVE BIRTH.)

A. When was your (first, second, etc.) child born? (ENTER DATE IN COL. Y OF BIRTH & PREG. RECORD BETWEEN HEAVY LINES.)	FIRST CHILD		SECOND CHILD		THIRD CHILD	
	Boy	Girl	Boy	Girl	Boy	Girl
B. What did you name the baby? (ENTER IN COL. Z OF BIRTH & PREG. RECORD NEXT TO DATE OF BIRTH.)	.....		.....		.....	
(ENTER C-F IN CHILD COLS. TO RIGHT)						
C. Was that baby a boy or a girl?	1	2	1	2	1	2
D. How much did (CHILD) weigh at birth?	Lb. Oz.					
IF DON'T KNOW TO D: (1) Did (he/she) weigh more than 5½ lbs. or less?	More . . . . 1 5½ or less . 2 Don't know . 8	More . . . . 1 5½ or less . 2 Don't know . 8	More . . . . 1 5½ or less . 2 Don't know . 8	More . . . . 1 5½ or less . 2 Don't know . 8	More . . . . 1 5½ or less . 2 Don't know . 8	More . . . . 1 5½ or less . 2 Don't know . 8
E. IF NOT LISTED IN HOUSEHOLD, ASK: I do not have (CHILD) listed in the household. Is (he/she) still living?	Yes[ASK(1)]. 1 No [ASK(4)]. 2					
IF YES, ASK: (1) Is this where (CHILD) usually lives or does (he/she) live somewhere else most of the time?	Lives here . 1 Lives somewhere else. 2 [ASK(2)&(3)]					
(2) When did (CHILD) last live with you regularly?	<input type="text"/> <input type="text"/> Month Year					
(3) Where is (he/she) living now? (His/her) own household . . . . . Long-term care institution . . . . . College/away at school . . . . . With other relatives . . . . . Other (SPECIFY) . . . . .	. . . . . 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5	. . . . . 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5	. . . . . 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5	. . . . . 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5	. . . . . 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5	. . . . . 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5
IF NO, ASK: (4) When did (CHILD) die?	<input type="text"/> <input type="text"/> Month Year					
F. IF (CHILD) LIVED WITH MOTHER AT LEAST TWO MONTHS, ASK: (1) When (CHILD) was an infant, did you breastfeed (him/her) at all?	Yes[ASK(2)]. 1 No . . . . . 2	Yes[ASK(2)]. 1 No . . . . . 2	Yes[ASK(2)]. 1 No . . . . . 2	Yes[ASK(2)]. 1 No . . . . . 2	Yes[ASK(2)]. 1 No . . . . . 2	Yes[ASK(2)]. 1 No . . . . . 2
(2) How many weeks old was (he/she) when you quit breastfeeding (him/her) altogether? RECORD VERBATIM IF R DOES NOT ANSWER IN "WEEKS."	<input type="text"/> <input type="text"/> Weeks					
Still feeding . . . . .	. . . . . 97	. . . . . 97	. . . . . 97	. . . . . 97	. . . . . 97	. . . . . 97
R definitely does not remember	. . . . . 98	. . . . . 98	. . . . . 98	. . . . . 98	. . . . . 98	. . . . . 98

20. Sometimes we miss a baby who died shortly after birth or never lived at home. Have we listed all your babies now? Yes . . . . . 1  
 No . (ASK A) . . . 2

A. IF NO: How many did we miss?  GO BACK TO Q. 19 AND ASK A-F FOR EACH BABY MISSED? ENTER INFORMATION ABOUT MISSED BABIES AND INDICATE PROPER BIRTH ORDER BY ARROW ON BIRTH AND PREGNANCY RECORD AND IN COLUMNS ABOVE.

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